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**The development and field test of a Mealtime
Interaction Clinical Observation Tool: a pilot study**

And

Clinical Research Portfolio

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Submitted in partial fulfilment of the requirements for the degree of
Doctorate in Clinical Psychology (DClinPsy)

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Chapter One: Systematic Review

Behavioural Interventions in Feeding Difficulties: A Systematic review

*Prepared in accordance with the requirements for submission to the Journal of
Pediatric Psychology (see appendix 1.1)*

Word count: 7161

Abstract

Objective

Behavioural interventions have long been cited in literature to be effective in treating childhood feeding difficulties. Despite these claims, a paucity of high quality published research means that conclusions should be drawn with caution. This systematic review builds on previous systematic reviews by exploring and summarising the most up-to-date research in behavioural interventions for childhood feeding difficulties.

Methods

Following a systematic search of literature published between January 2013 and April 2016, nine studies were identified as eligible for inclusion. The risk of bias of these studies was assessed and considered while conclusions were drawn. One study was removed owing to a high risk of bias and a narrative synthesis of the remaining study findings was undertaken.

Results

Four randomised trials and four non-randomised trials were included in the narrative synthesis, where a variety of behavioural interventions were evaluated across outpatient, inpatient and intensive day treatment settings. Study findings support the efficacy of behavioural interventions for childhood feeding difficulties.

Conclusions

These findings are in line with previous reviews of behavioural interventions for childhood feeding difficulties, while providing further support that these can be effective in outpatient settings, which has positive implications for clinical practice.

Introduction

Feeding difficulties

The term 'Feeding difficulties' describes a wide range of presentations which results in reduced nutritional intake and can lead to compromised growth and development (Arts-Rodas & Benoit, 1998). These range from selective or 'fussy' eating in the typically developing child with no organic cause, to those with complex medical diagnoses requiring tube-feeding to provide nutritional intake. In any case, adequate nutritional intake is crucial to the young child for adequate growth and development. Symptomatology can include food refusal, fussiness, restrictive range of foods eaten, eating slowly and disruptive behaviours at mealtimes (Blissett, Meyer, Farrow, Bryant-Waugh & Nicholls, 2005; Sanders, Patel, Le Grice & Shepherd, 1993).

The role of mealtime environment and parent-child interaction has long been recognised as an important factor in the maintenance of feeding difficulties (Arts-Rodas & Benoit, 1998) and therefore a key area for treatment. Miller et al. (2001) cite three studies concerned with evidence-based behavioural interventions for feeding difficulties, in their paper describing an interdisciplinary team approach to feeding difficulties. Given the importance of parent-child feeding interactions, behaviour and the emotional environment in feeding difficulties, it is understandable that behavioural treatment approaches are indicated in childhood feeding difficulties.

Behavioural Interventions in Feeding Difficulties

Behavioural treatments based on learning theories, including classical and operant conditioning and social learning theory, are effective in paediatric feeding difficulties management (Benoit, Wang & Zlotkin, 2000; Byars et al., 2003; Piazza & Carroll-Hernandez, 2011). Such treatments therefore aim to identify and extinguish reinforcements (e.g. attention) for undesirable feeding behaviour and introduce positive

reinforcements for desirable feeding behaviour. The wider feeding environment is also considered to identify possible sources of modelling appropriate feeding behaviour (e.g. siblings and parents).

Rationale for current review

Lukens and Silverman (2014) reviewed published research between 1998 and 2013, evaluating the effect of psychological interventions for paediatric feeding problems. Thirteen studies were included in a narrative synthesis; two randomized controlled trials (RCT) and eleven non-randomised studies (NRS) that examined aggregated outcome data.

The authors concluded that the best available evidence of non-randomised before-and-after studies showed promising results when behavioural interventions that include nutritional manipulation are implemented. Only one of the RCTs supported the efficacy of the intervention in the outpatient setting. Rather, inpatient and day treatment programmes have the most available support for positive treatment outcomes, supporting ongoing implementation of behavioural intervention in these environments (Lukens & Silverman, 2014). Lukens and Silverman (2014) highlight the slow progression of literature; 15 studies were identified to meet their inclusion criteria and only two of these were RCTs, the gold standard for evaluating treatment efficacy. To date, only limited conclusions can be made in relation to psychological or behavioural intervention for childhood feeding difficulties.

The Cochrane Collaboration group recommend that frequent reviews of the literature should be completed. Furthermore, reviews should be updated after two years to reduce the risk of out-of-date and misleading information (Higgins, Green & Scholten, 2008). It is therefore timeous to review the literature in order to summarise the most up-to-date research in behavioural interventions for childhood feeding difficulties.

Review Objectives

This review aims to explore and summarise research in behavioural interventions for childhood feeding difficulties (2013 - 2016).

Method

Systematic Search Strategy

A systematic search of published literature was conducted in April 2016 by the primary researcher using the following online interfaces and electronic databases: Ovid (Medline, Embase), EBSCO (CINAHL, PsychINFO, Psychology and Behavioural Sciences Collection), Web of Science and The Cochrane Library.

Databases were searched for publications between January 2013 and April 2016, to identify new research since Lukens and Silverman's (2014) systematic review, ensuring no publications were missed. Subject heading and keyword searches were performed using terms relating to the intervention and population as follows:

(Behavioural management, behavioural modification, behavioural manipulation, behavioural intervention, behavioural therapy, behavioural training, parenting, parenting intervention, parent management, psychological therapy, psychological treatment, psychological management)

AND

(childhood, child, paediatric, infant)

AND

(feeding, eating, food, AND selective, restrictive, problems, difficulties, aversion, refusal, failure to thrive, fussy, faddy, picky, neophobia, weaning).

Boolean operators (OR and AND) were used to combine search strings and truncation was used to ensure the identification of search terms where spellings and word endings differ e.g. plural or adjectives. A librarian in NHS Greater Glasgow and Clyde was consulted to ensure that this search strategy was robust and would identify appropriate articles for review.

The search was limited to English Language, population up to 16 years and humans. To increase the sensitivity of the search, reference lists of included articles were hand searched for any literature.

Study Selection

The primary researcher screened all articles against inclusion and exclusion criteria presented in Table 1.

Table 1: Inclusion and Exclusion Criteria

Category	Criteria
	Peer reviewed journal articles. English language. January 2013 - April 2016.
Study Design	Randomised controlled trials (RCTs), Randomised trials, Non-randomised studies with aggregated outcome data.
Population	Children or families of children up to 8 years with feeding difficulties including; Avoidant/restrictive food intake disorder (ARFID), tube feeding dependency.
Intervention	Behavioural modification / behavioural intervention / parenting programmes based on behavioural learning theories.
Comparison	Treatment as usual (TAU), waitlist control, an alternative intervention or an active comparison intervention that controls for non-specific therapeutic effects.
Outcomes	A minimum of one clinical outcome, including (but not restricted to), variety/ quantity of foods accepted, child growth, stress at mealtimes, parental stress, inappropriate / appropriate mealtime behaviour.
Exclude	Single case studies, review articles, articles examining qualitative data, Interventions including social cognitive theory, peer support, other non-behavioural interventions. Populations of typically developing children with no feeding difficulties, those who are overweight, meet diagnostic criteria for an eating disorder.

Assessment of Risk of Bias in Included Studies

To assess the methodological quality of included studies, a risk of bias assessment was completed for each study meeting inclusion criteria. The primary researcher assessed this using the Cochrane Risk of Bias Tool (Higgins & Altman, 2008), as recommended by the Cochrane Collaboration (Reeves, Deeks, Higgins & Wells, 2008) as non-randomised studies were included. A second assessor, a Doctorate in Clinical Psychology trainee, provided secondary assessments on a proportion of the included studies. There was a 75% agreement between assessors and discrepancies were resolved through discussion. One of the eligible studies was not included in the narrative synthesis owing to a high risk of bias, shown in Figure 1.

Data extraction

A standardised data extraction table was developed into which study characteristics and findings were organised. This included details of the study design, participants, sample size, intervention and any comparison conditions, assessment and outcome measures used, assessment time points and main findings of the study.

Narrative synthesis

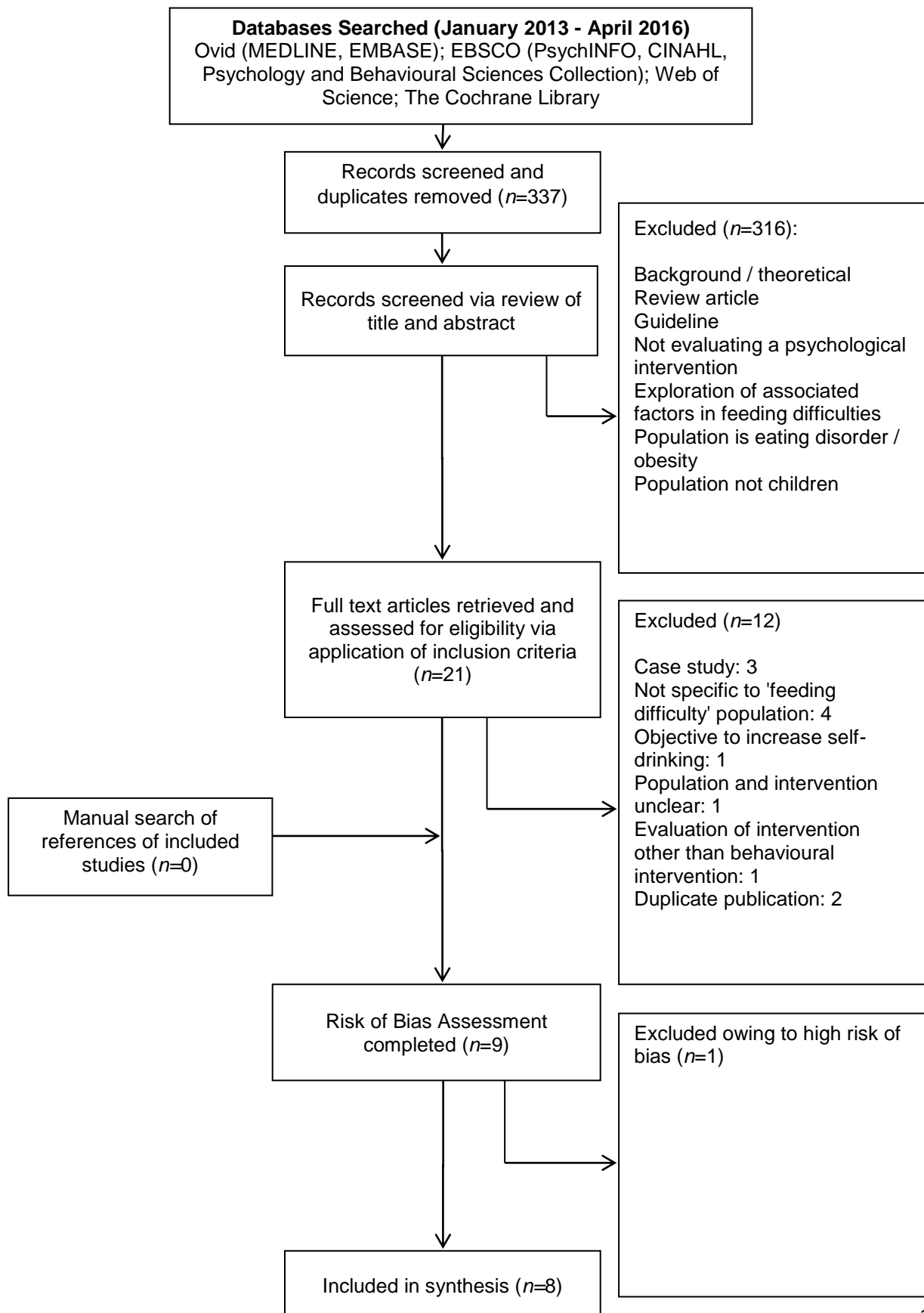
Following the risk of bias assessment and data extraction, a narrative synthesis of the study findings was undertaken. Narrative synthesis is a systematic approach to reviewing findings from multiple studies to provide a description of the synthesised findings in relation to a given question (Popay et al, 2006). This approach was selected for the current review, as there was considerable heterogeneity in study design and outcome measurement, therefore results from individual studies could not be meaningfully pooled.

Results

Search results

The electronic database searches identified 2689 studies. Firstly, duplications were removed and an initial screen of the remaining study titles was undertaken, leaving 337 articles for review. Titles and Abstracts of these articles were reviewed, resulting in 21 studies for which full-text articles were retrieved. These were reviewed again with the application of the inclusion criteria, outlined in Table 1. A total of nine articles met inclusion criteria for this review, however one study, owing to a high risk of bias (Wilkins et al., 2014), was removed before the narrative synthesis was conducted. Details of the twelve studies excluded at this stage can be found in Appendix 1.2. This study selection process is illustrated in Figure 1.

Figure 1: Flow Diagram of Study Selection



Risk of Bias Assessment

Findings from the risk of bias assessments can be viewed in Tables 2 and 3. The risk of bias of studies provided a context within which to consider the findings of the included studies. Wilkins et al. (2014) was removed owing to a high risk of bias in two areas (selection bias and reporting bias) and insufficient information regarding the other three sources of bias (Table 3). This was in contrast to the remaining NRSs, where at least two areas were considered to have a low risk of bias. Johnson et al. (2015) showed low risk of bias across four of five possible areas. As might be expected, the RCTs included in this review demonstrated a much lower risk of bias (Table 2). Only one RCT (Sharp et al., 2016) was found to have three (out of a possible seven) areas of high risk of bias, while only Marshall et al. (2015) showed a high risk of bias in two areas. Adamson et al. (2013) and Sharp et al. (2014) were found to have low risk of bias in six of seven areas.

Table 2: Risk of Bias in RCT studies (n=4)

	Adamson et al. (2013)	Marshall et al. (2015)	Sharp et al. (2014)	Sharp et al. (2016)
Random Sequence Generation (selection bias)	+	+	+	+
Allocation Concealment (selection bias)	+	+	+	+
Blinding of participants and personnel (performance bias)	?	-	+	-
Blinding of outcome assessment (detection bias)	+	+	+	-
Incomplete outcome data (attrition bias)	+	+	+	+
Selective reporting (reporting bias)	+	+	+	+
Other biases	+	-	-	-
+ low risk of bias, - high risk of bias, ? unclear risk of bias				

Table 3: Risk of Bias in Nonrandomised studies (n=5)

	Gonzalez et al. (2013)	Gonzalez et al. (2014)	Johnson et al. (2015)	Silverman et al. (2013)	Wilkins et al. (2014) *
Random Sequence Generation (selection bias)	-	-	-	-	-
Blinding of outcome assessment (detection bias)	+	?	+	+	?
Incomplete outcome data (attrition bias)	+	+	+	-	?
Selective reporting (reporting bias)	+	+	+	+	-
Other biases	-	+	+	-	?
+ low risk of bias, - high risk of bias, ? unclear risk of bias					

* removed from narrative synthesis owing to high risk of bias

Data Extraction

Data extraction was completed for each of the nine identified studies that met inclusion criteria. Table 4 summarises the eight studies included in the narrative synthesis. Appendix 1.4 includes the data extraction of the excluded study (Wilkins et al., 2014).

Description of Included studies

Study Design

Three RCTs (Adamson, Morowaska & Sanders, 2013; Sharp, Burrell & Jaquess, 2014; Sharp et al., 2016), one Randomised Trial (Marshall, Hill, Ware, Zivianti & Dodrill, 2015) and four NRSs (Gonzalez, Rubio & Taylor, 2014; Gonzalez, Taylor, Borrero & Sangkavasi, 2013; Johnson, Foldes, DeMand & Brooks, 2015; Silverman et al., 2013) are included in the narrative synthesis of this systematic review.

Four studies evaluated outpatient interventions; two delivered in groups (Adamson et al., 2013; Sharp et al., 2014) and two delivered individually (Johnson et al., 2015; Marshall et al., 2015). Three studies evaluated intensive day treatments delivered individually (Gonzalez et al., 2013; Gonzalez et al., 2014; Sharp et al., 2016). One study evaluated individual interventions in the inpatient setting (Silverman et al., 2013).

Sample Characteristics

Six studies were conducted in the USA, while two studies were conducted in Australia. Sample sizes ranged from 2 - 96. Participants were either children aged 1 year - 8 years or their parents. Four studies evaluated interventions for children with a diagnosis of ASD and feeding difficulties (Adamson et al., 2013; Johnson et al., 2015; Marshall et al., 2015; Sharp et al., 2014). The remaining studies required only a

feeding difficulty; self described or meeting diagnostic criteria for Avoidant / restrictive food intake disorder (ARFID).

Description of Interventions

Randomised Studies

The RCTs compared behavioural interventions to a waitlist control. Two of these delivered an outpatient group over 8 weeks (Adamson et al., 2013; Sharp et al., 2014). Sharp et al. (2016) compared an intensive manualised behavioural intervention delivered individually in an inpatient setting across 5 consecutive days. Marshall et al. (2015) compared two behavioural interventions to one another: Operant conditioning (OC) and systematic desensitisation (SysD), across 10 treatment sessions, delivered weekly or intensively (10 sessions in one week).

Nonrandomised studies

Johnson et al. (2015) evaluated a manualised behavioural parent training program over 9 sessions. Silverman et al. (2013) evaluated a behavioural treatment program delivered 3 times per day, 7 days per week until discharge. Two studies evaluated specific behavioural manipulations with differential reinforcement 3-4 times per day for 6-8 weeks, using a within-subjects experimental design (Gonzalez et al., 2013; Gonzalez et al., 2014).

Outcome domains

Every study measured outcomes at pre-and post- intervention where appropriate. Six of eight studies measured outcomes at follow-up between 1 month and 1 year after treatment.

Every study measured child mealtime behaviour, while five studies measured parent stress (Adamson et al., 2013; Johnson et al., 2015; Marshall et al., 2015; Sharp et al., 2014; Sharp et al., 2016). It is encouraging to see studies measure this outcome; literature has indicated that parental stress can be high when children have feeding difficulties (Mason, Harris & Blissett, 2005), therefore, it is clinically useful to be able to measure whether or not interventions can affect this domain.

Four studies measured dietary variety (Adamson et al., 2013; Johnson et al., 2015; Marshall et al., 2015; Sharp et al., 2014), while five studies measured oral food consumption by percentage bite acceptance and/or mouth cleans, weight or calories (Marshall., 2015; Gonzalez et al., 2013; Gonzalez et al., 2014; Sharp et al., 2016; Silverman et al., 2013). Four studies measured parent satisfaction of the intervention (Adamson et al., 2013; Johnson et al., 2015; Sharp et al., 2014; Sharp et al., 2016).

Effects of Interventions

Main findings of each study can be viewed in Table 4. Intervention effects will be discussed by outcome domains.

All but one study (Sharp et al., 2014) reported an improvement in child behaviour in intervention conditions. This is an encouraging finding in support of behavioural interventions for feeding difficulties. Moreover, according to Sharp et al. (2014), it is possible that the design of the evaluated intervention could explain their non-significant finding. In their evaluation of The Autism MEAL Plan: A parent-training curriculum to manage eating aversions and low intake among children with autism, they report limitations in study design including statistical power and timeframe of measurement. The first half of the intervention focussed on foundation behavioural principles (e.g. routine and consistency, selective ignoring) while methods for introducing new foods into mealtimes did not occur until week 6 of an 8 week programme. The programme

also emphasised the importance of slowly introducing new foods. It could be hypothesised therefore, that an intervention effect not evident at post-intervention may have been captured at follow-up. Findings in Sharp et al.'s (2016) follow-up outcome measures support this hypothesis. They found that the increase in grams of food consumed continued to rise between post-treatment and 1-month follow-up, indicating that improvements may continue post-treatment.

Marshall et al. (2015) compared effects of OC and SysD to one another and found no significant difference in child behaviour between these conditions, rather there was an improvement across both interventions.

Of the five studies that measured effects on parents e.g. stress, confidence, cognitions, all but one (Silverman et al., 2013) reported significant reductions in parenting stress or improvement in parenting confidence and parenting strategies. It is interesting that this is also the only study to evaluate an intervention in the inpatient setting. It is possible therefore that, if these participants were more medically unwell than those who could take part in outpatient settings, parents' anxiety and stress may have been less susceptible to change in this context.

While four studies measured dietary variety, only two studies (Sharp et al., 2014; Marshall et al., 2015) explored the impact of intervention on this measurement and only Marshall et al. (2015) found a significant effect. They found an increase in total number of unprocessed fruits and vegetables consumed at post-intervention in both intervention arms (OC and SysD). The OC intervention showed a slightly higher increase compared to SysD, but this difference was not significant.

Five studies measure the amount of food consumed orally; through weight, calories or percentage bite acceptance and/or mouth cleans. Encouragingly, all five studies report significant intervention effects in that there were measurable increases in oral consumption of food.

Lastly, when measured in four studies, client satisfaction of the behavioural interventions was high.

Overall, the results of these eight studies support that the evaluated behavioural interventions were successful in improving child mealtime behaviour, reducing parent stress and increasing amount and variety of food consumed orally.

Table 4: Characteristics of Included Studies

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
<u>Outpatients - Group Interventions</u>				
Adamson et al. (2013), Australia	94 mothers, 2 fathers of typically developing children 1.5 - 6 years	Hassle free mealtimes Triple P (behavioural family intervention for feeding difficulties), 4 x 2 hour group sessions 3 x telephone sessions 1 x final group session Held over 8 weeks, Delivered by psychologists accredited as Triple P facilitators and trained in the program.	Mealtime diary (MD) Dinner Observation (MOS) Child feeding behaviour (PATFA) Mealtime parenting strategies (PATFA) Parental cognitions (PATFA) Child behaviour (ECBI) Parenting style (PS) Parenting self-efficacy and confidence (PTC) Client Satisfaction Questionnaire (CSQ)	<u>Post Intervention</u> <u>Child Behaviour</u> Significant intervention effect found for problematic child feeding behaviour: reduction in frequency and number of problematic behaviours (PATFA), $F(2.57) = 8.68$, $p = 0.001$ Intervention effect for general child behaviour (ECBI), $F(2,63) = 3.52$, $p = 0.036$ <u>Parenting</u> Significant intervention effect - higher mealtime confidence and fewer maladaptive parenting strategies and unhelpful cognitions (PATFA), $F(4,46) = 15.64$, $p < 0.001$ Greater confidence and more adaptive parenting style (PS & PTC), $F(3,66) = 6.06$, $p = 0.001$ <u>Parent- Child Interactions</u> Significant Intervention effect: positive child behaviour and negative child behaviour significantly improved (MOS), $F(2,66) = 5.12$, $p = 0.009$. <u>Eating and Mealtime Behaviour</u> Significant Intervention effect: reduction in disruptive mealtime behaviour and parent ratings of difficulty (MD), $F(3,38) = 4.38$, $p = 0.01$. <u>6 month follow-up</u> Significant multivariate time effects found for child, $F(4,17) = 15.44$, $p < 0.001$, parent mealtime $F(4,18) = 30.22$, $p < 0.001$, and general parenting variables $F(3,24) = 6.51$, $p = 0.002$. Improvements in child behaviour $F(2,25) = 6.43$, $p = 0.006$ and parent behaviour $F(2,25) = 4.42$, $p = 0.023$.
RCT	<u>N = 96</u> Intervention = 49 Waitlist control = 47	Comparison: Waitlist control (WLC)	Pre-intervention Post-intervention (treatment condition), after 8-10 weeks, before receiving treatment (WC) (19.79%) 6 months later (38.78%)	

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
Sharp et al. (2014), USA	Parents of children with ASD diagnosis, 3-8 years	The Autism MEAL Plan (behavioural intervention for feeding difficulties in ASD), 8 x 1 hour parent-training group sessions, Delivered by a behavioural psychologist expert in paediatric feeding disorders and a postdoctoral psychology fellow	Dietary Diversity (FPI) Mealtime behaviour (BAMBI) Parenting Stress (PSI-SF) Satisfaction and perceived improvement (SVPPI)	<u>Feasibility outcomes:</u> Social validity and parent perception of improvement: High degree of social validity <u>Efficacy Outcomes:</u> Significant reduction in PSI scores in treatment group, $F(1,16) = 7.6, p = 0.01$. No significant changes detected in terms of feeding behaviours (BAMBI and FPI) or in dietary variety (FPI)
RCT	<u>N = 19</u> Treatment = 10 Waitlist control = 9	Comparison: Waitlist control, who received, by e-mail, handouts on non-feeding related topics with limited behavioural content	Pre-intervention Post-intervention	

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
<i>Outpatients - Individual interventions</i>				
Marshall et al. (2015), Australia	68 participants: Children with ASD and NMC and feeding difficulties, 2-6 years	Behavioural interventions: Operant conditioning (OC) and systematic desensitisation (SysD) compared to one another, 10 treatment sessions offered intensively (10 sessions in 1 week) or weekly (10 sessions in 10 weeks)	Dietary Intake (3 day weighed food diary) Dietary variety Mealtime behaviours (BPFAS) Weight, height, BMI Child behaviour (ECBI) Parenting Stress (PSI-SF)	<u>Post - Intervention</u> Favourable results were observed regardless of intervention, intensity or etiological group. Both these intervention approaches are effective. There was a trend towards greater increase in total number of foods consumed (-3.3 foods, 95% CI -6.8 to 0.1, $p = 0.06$) and total number of unprocessed fruits and vegetables consumed (-1.3, 95% CI -2.7 to 0, $p = 0.05$) in OC arm.
Randomised Trial	N = 68 OC = 36 SD = 32 Intensive = 25 Weekly = 43		Pre-intervention Post-intervention 3 month follow-up (13%)	Trend towards greater reduction of difficult mealtime behaviours (3.5, 95% CI -1.4 to 8.4, $p = 0.15$) in the OC arm, but this was not significant. <u>3 month follow-up</u> Favourable results observed for all primary outcomes (all $p < 0.05$).

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
Johnson et al. (2015), USA	Parents of 14 children with ASD and feeding problems Age 2 - 7 years	Manualised behavioural parent training programme for parents with children with ASD and feeding problems, 9 sessions, delivered individually, by doctoral or masters level therapists, trained in applied behaviour analysis with experience with children with ASD	Height, weight and BMI Mealtime behaviours (BAMBI) Disruptive and noncompliance behaviours (ABC) Parenting Stress (PSI-SF) Recent dietary intake (3DFRs) Parent Satisfaction (PSQ) Treatment fidelity (TFC)	<u>Efficacy Outcomes</u> Significant improvement in mealtime behaviours (BAMBI) across time points Significant reduction in disruptive and non-compliance behaviours (irritability and hyperactivity subscales on ABC) Significant reduction in parenting stress (PSI) Effect sizes ranged from medium to large <u>Treatment Fidelity(TFC)</u> Treatment integrity was 98.4% (range 75% - 100%) Parent adherence was 94.1% (range 50% - 100%)
NRS	N = 14		Pre-intervention Week 8 Week 16 (3.2%)	<u>Parent Satisfaction(PSQ)</u> Mean parent satisfaction of 81.96% (range 78.2% - 100%)

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
<i>Intensive Day Treatments - Individual Interventions</i>				
Gonzalez et al. (2013), USA	2 children; 3 years, 5 years Typically developed with severe food refusal	Individualised Levels treatment: differential reinforcement (using preferred stimulus) of independent eating, escape extinction contingent upon food refusal, response costs for exceeding a criterion level of prompts / packs. 3-4 x day, 6-8 weeks ABAB and BAB design	Percentage bite acceptance Mouth cleans Prompts Packs Independent acceptance	<p><u>Child 1: Baseline condition:</u> Prompts and packs high and variable (M=8.70; range 1.00-22.00) Bite acceptance and mouth clean decreased across sessions (M=70.5%; range 25% - 100%)</p> <p><u>Levels system condition:</u> Prompts and packs decreased (M=3.39; range 0.00-12.00) Bite acceptance and mouth clean was moderate and stable (M=73%; range 47%-87%)</p> <p><u>Withdrawal of levels system:</u> Prompts and packs increased (M=13.00; range 2.00-24.00) Percentage bite acceptance and mouth clean decreased (M=50%; range 28%-74%)</p>
NRS Within subjects experimental design	N = 2		Baseline Levels (intervention conditions) 2 month follow-up	<p><u>Reintroduction of levels system:</u> Prompts and packs decreased to previously observed levels (M=2.71; range 0.00-9.00) Percentage bite acceptance and mouth cleans increased (M=76%; range 50%-94%)</p> <p><u>Follow-up:</u> zero levels of prompting and packing observed</p> <p><u>Child 2: Levels system condition:</u> Prompts decreased across session (M=3.96; range 0.00-25.00) Independent acceptance was high and stable (M=95%; range 67.5%-100%)</p> <p><u>Withdrawal of levels system:</u> Prompts increased (M=11.00; range 5.00-17.00) Independent acceptance decreased (M=83.6%; range 75%-92%)</p> <p><u>Reintroduction of levels system:</u> Prompts decreased (M=0.89; range 0.00-4.00) Independent acceptance high and stable (M=99%; range 94%-100%)</p> <p><u>Follow-up:</u> independent acceptance 100%, zero prompts</p>

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
Gonzalez et al (2014), USA	9 children, 2 female, 7 male, 1 year - 5years Severe food refusal	Evaluation of behavioural manipulations across a number of 7 conditions: Preferred tangibles(e.g. toy, DVD, puzzle) with control, attention, escape Preferred tangible without control, attention, escape Contingent access to preferred tangible following IMB 3-4 x day, 6-8 weeks	Inappropriate mealtime behaviour (IMB) Bite acceptance	<u>5 patterns of within-subjects responses were found when tangibles (e.g. toy, DVD, puzzle) were provided non-contingently:</u> Decrease in IMB during control, escape and attention conditions Decrease in IMB during attention condition only Increase in IMB during attention condition only Decrease in IMB during control condition only Undifferentiated levels of IMB compared to relevant comparison conditions without tangibles. IMB levels for all participants was equal or lower in control with tangible condition
NRS , within subjects, repeated measures design	N = 9		Baseline Intervention conditions (0%)	Inclusion of preferred tangible reduced IMB for most participants.

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (statistical results where provided)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
Sharp et al (2016), USA	20 children 1 year 1 month - 6 years ARFID diagnosis	Integrated eating aversion treatment (iEAT); A manual-based and technology-supported behavioural feeding intervention, 14 x 40 minute meals delivered across 5 consecutive days, Delivered by 4 trained bachelor level therapists, under supervision of a licensed psychologist. Feeding was gradually handed over to parent.	Height, weight, BMI-for-age percentile Meal observation: acceptance, disruptions, grams consumed Treatment satisfaction Treatment fidelity	<u>Efficacy Outcomes at post - intervention</u> Favour intervention: Significantly greater increase in bites accepted pre- to post-treatment compared to WLC (88.9% vs 5.6% respectively; $p = 0.008$) Significantly greater reduction in disruptions compared with WLC (55.6% vs 9.2%; $p = 0.038$) Significant increase in volume of food consumed in iEAT group following treatment (31 net grams in the 10 minute observation) Magnitude for observe effect for iEAT ($d = 1.03$ -2.11)(large range) Slight increase in BMI-for-age percentile in iEAT group. <u>1 month Follow-up</u> Mealtime behaviours relatively unchanged from study endpoint and significantly better than baseline (median bites accepted = 100%; range 50%-100%) Significant increase in grams consumed (median: 71; IQR: 12-140) compared with post-intervention (median: 34; IQR: 18-39; $p = 0.031$) <u>Treatment Satisfaction</u> High levels of overall satisfaction
RCT	<u>N = 20</u> Treatment = 10 Waitlist control = 10	Wait list control (WLC)	Pre-intervention Post-intervention(Treatment = 10%, waitlist control = 20%) 1 month follow-up (22%)	

Table 4: continued

Study, country	Participants	Intervention	Outcome measures	Main Findings (statistical results where provided)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
<i>Inpatients - Individual Interventions</i>				
Silverman et al. (2013), USA	77 children with feeding disorder, GT dependence, inability to maintain acceptable growth via oral feeding Age = 4.5 ± 2.2 years	Intensive Inpatient behavioural treatment programme using well-established behavioural techniques to achieve weaning (environmental controls, appetite manipulation, contingency contacting, re-presentation, texture fading, differential reinforcement of other behaviour) 3 phases; 1 = meals fed by team of 4 psychologists while caregiver observed 2 = caregivers transitioned into the feeding environment 3 = psychologist coached caregiver remotely via earpiece Delivered 3 x day, 7 days per week until discharge	<u>Psychosocial status</u> Parents beliefs and concerns regarding child's eating (AYCE) Mealtime Behaviour problems (MBQ) Parenting Stress (PSI-SF) <u>Nutritional status</u> Oral percentage of caloric goal	<u>Psychosocial status</u> Child resistance to eating significantly reduced (AYCE) (T=51.22, $p<0.00$) Parent aversion to mealtime significantly improved ($F=18.76$, $p<0.000$) Positive mealtime environment significantly improved ($F=9.13$, $p=0.004$) Problem mealtime behaviours significantly improved (MOS)($F=60.91$, $p<0.0001$) PSI-SF Parent related stress reduced, not significantly ($F=3.11$, $p=0.086$) <u>Nutritional status</u> Oral intake increased from 30% ± 2.5% to 82% ± 3%(mean ± SEM) Caloric goal by oral feeding increased from 28% (range 0%-113%; SD 23%) to 83% (range 12% - 167%; SD 27.8%) At discharge 51% needed no GT feeding, <u>12 month follow-up</u> <u>Nutritional status</u> Increase in oral percentage of caloric goal was sustained = 85% ± 3.6% (mean ± SEM)
NRS	N = 77		<u>Psychosocial status:</u> Intake assessment, pre-, post-treatment <u>Nutritional status:</u> Intake assessment, pre-, post-treatment, 1 month, 3 months, 6 months, 1	<u>1 year follow-up</u> 63% needed no GT feeding.

			year after treatment	
3DFRs = 3 day food records; ABAB (or BAB) = single subject experimental design where A=treatment, B=baseline or vice-versa; ABC = Aberrant Behaviour Checklist; ASD = Autism Spectrum Disorder; ARFID = Avoidant/restrictive food intake disorder; AYCE = About your child's eating; BAMBI = Brief Autism Mealtime Behaviour Inventory; BMI = Body Mass Index; BPFAS = Behavioural Paediatric Feeding Assessment Scale; CSQ = Client Satisfaction Questionnaire; ECBI = Eyberg Child Behaviour Inventory; FPI = Food Preferences Inventory; GT = Gastrostomy tube; IQR = Interquartile range; MBQ = Mealtime Behaviour Questionnaire; MOS = Mealtime observation schedule; NMC = non medically complex; NRS = Nonrandomised study; OC = operant conditioning; PATFA = Parent and Toddler feeding assessment; PS = Parenting Scale; PSI-SF = Parenting Stress Index-short form; PSQ = Parent Satisfaction Questionnaire; PTC = Parenting Tasks Checklist; RCT = Randomised Control Trial; SD = standard deviation; SEM = standard error of mean; SRS -parent report form = Social Responsiveness Scale - parent form; SVPPPI = Social validity and parent perception of improvement; SysD = systematic desensitisation; TFC = Treatment Fidelity Checklist; WLC = waitlist control				

Discussion and Implications for Future Research

The purpose of this review was to summarise and review the most up-to-date research in behavioural interventions for childhood feeding difficulties, building upon the findings in the earlier systematic review conducted by Lukens and Silverman (2014).

Similar to Lukens and Silverman (2014), the included studies that this review identified evaluated interventions across three settings: outpatient, day treatment facilities and inpatient settings. Similar intervention types and duration were also identified across both reviews: outpatient interventions evaluated in Lukens and Silverman (2014) lasted between 8 to 14 sessions, while this review identified outpatient interventions lasting between 8 and 10 sessions. It is encouraging that positive interventions effects were found across all these settings, as children with feeding difficulties continue to be treated across a variety of settings depending on a number of factors e.g. severity and nature of feeding difficulty. Both this review and Lukens and Silverman's (2014) highlight the multi-disciplinary nature of treating childhood feeding difficulties. For example Lukens and Silverman (2014) reviewed studies where behavioural intervention was carried out alongside nutrition counselling (Benoit et al., 2000) and appetite manipulation (Davis, Bruce, Mangiaracina, Schulz & Hyman, 2009) while this review identified appetite manipulation as an intervention component alongside the behavioural intervention (Silverman et al., 2013). While the studies included in both reviews were chosen as they evaluated behavioural interventions, the multi-disciplinary nature of treatment for childhood feeding difficulties should be borne in mind, and in many cases, behavioural intervention alone may not be enough to treat these difficulties successfully.

There has been an apparent increase in research evaluating behavioural interventions for feeding difficulties and importantly, in RCTs, the gold standard of research trials. In contrast to Lukens and Silverman (2014) identifying only 15 studies including two RCTs between 1998 and 2013, this review identified nine studies including four randomised

trials (including three RCTs using a waitlist comparison) in a three year period. This is an encouraging finding, as it ensures more confident conclusions can be drawn from higher quality research. Only one included study has a sample of 2, with the remaining 7 studies conducted with between 9 and 96 participants; another step forward in the methodological quality of published research in this area (Lukens & Silverman, 2014). This results in the findings of these studies, and of this review being more applicable to the wider population of childhood feeding difficulties. Further improvements in methodologies utilised in these studies include the employment of independently assessed outcome measures rather than rely on parent report alone. This has been employed in six of the eight studies reviewed (Adamson et al., 2013; Gonzalez et al., 2013; Gonzalez et al., 2014; Marshall et al., 2015; Sharp et al., 2016; Silverman et al., 2013), all reporting positive intervention effects. This ensures that results can be interpreted from more methodologically sound studies.

Of the included studies, the randomised trials, judged to have the lowest risk of bias, all supported the efficacy of behavioural interventions to improve feeding difficulties. Three studies were conducted in the outpatient setting; a novel finding compared to Lukens and Silverman (2014) who conclude that the best available evidence to date supports inpatient and intensive day treatment facilities. This review identified only one study conducted in the inpatient setting, while Lukens and Silverman (2014) proportionally identified most of these study types compared with outpatient and intensive day treatment facility studies. This might indicate an encouraging trend towards research being carried out in more community based settings, which has important implications for clinical practice. This finding adds to the current literature of behavioural interventions for childhood feeding difficulties, providing evidence that these interventions can be successful in the community.

The majority of interventions reviewed in this study include a number of individual behavioural manipulations being employed simultaneously e.g. positive reinforcement, negative reinforcement, escape extinction, OC and SysD. One study (Marshall et al.,

2015) attempted to ascertain if one particular behavioural strategy was superior to the other (OC vs SysD), but did not find significant differences between the two. This result, along with the others could lead one to conclude that any behavioural intervention is effective, and none more than another. This study was however, judged to have a high risk of performance bias, and so it remains to be seen whether or not further studies can isolate particular behavioural strategies that prove more effective than others. This would be an important development for future research to ensure the development of highly effective behavioural interventions for this population.

It is important to note that only a proportion of studies measured dietary variety or amount of food consumed orally. Although a main aim of the behavioural intervention is of course, to improve child (and on occasions, parent) mealtime behaviour, presumably this is with the assumption that this in turn increases the amount or variety of food consumed. Although the evidence presented here generally supports positive intervention effects on mealtime behaviour, there is less explicit evidence that this translates to the ultimate goal of an increase in amount and variety of food consumed orally. This will be an important area for future research.

The excluded study (Wilkins et al., 2014) reported mixed results when non-removal and re-presentation of bites on either a spoon or Nuk was evaluated (n=12). The non-removal and re-presentation improved feeding behaviour, but in different ways, for 8 of 12 children. This study, although considered to have a high risk of bias, does highlight the issue of individual differences. While it is advantageous to evidence that specific behavioural interventions can be successful for a wide population, it should be borne in mind that individual differences may moderate the effectiveness of interventions for clients.

Three of the studies reviewed here evaluated behavioural interventions in children with ASD, with mixed results. Sharp et al. (2014) evaluated The Autism MEAL Plan, a behavioural intervention provided over 8 x 1 hour group sessions, finding no

intervention effect. This is in contrast to Marshall et al. (2015) and Johnson et al. (2015) who evaluated behavioural interventions delivered individually over 10 and 9 sessions respectively. These findings indicate that it is possible that children with ASD may be less likely to respond to behavioural interventions delivered in a group format and may require more specialist or individually tailored interventions to successfully change mealtime behaviours. In light of the small number of three studies including children with ASD and the inconclusive findings, further research in this area would be beneficial. It would be important to explore whether or not children with ASD and feeding difficulties require their behavioural interventions to be different in some way, to bring about positive change.

Despite the encouraging results from this review, there were limitations that should be considered when interpreting the results. The review included studies published in the English language only and those included in the narrative synthesis were conducted in the USA or Australia only. It is possible therefore that studies conducted in other geographical areas either support or contradict the findings from these primary studies, but have not been considered here.

Conclusions

In line with current published literature and as a result of more robust research methods, the available evidence suggests positive intervention effects of behavioural interventions for childhood feeding difficulties. Additionally, this review provides growing evidence that they can be effective in the outpatient setting.

Future studies with more rigorous research methods, increased sample sizes and reduced risk of bias are needed to be able to draw firmer conclusions about the efficacy of these behavioural interventions. Of particular interest for future research may be to ascertain if specific behavioural strategies are superior to others, and, if

observed improvements in child mealtime behaviour accompany an increase in amount and variety of food consumption.

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Chapter Two: Major Research Project

The development and field test of a Mealtime Interaction Clinical Observation Tool: a pilot study

*Prepared in accordance with the requirements for submission to the Journal of
Pediatric Psychology (see appendix 1.1)*

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Plain English Summary

Title

The development and field test of a Mealtime Interaction Clinical Observation Tool: a pilot study.

Background

Childhood feeding difficulties can reduce food intake and the ability of a child to grow and develop healthily. In some instances, feeding difficulties can require a child to be fed by a tube directly into the stomach, called 'tube-feeding', to provide the child with the nutrition they need (Schauster & Dwyer, 1996). It has been found that weaning a child (moving from tube feeding to oral feeding) may be stressful and anxiety provoking for families (Mason, Harris & Blissett, 2005). Parents can become anxious that their child may not gain weight and grow healthily through oral feeding only, which can lead to stressful mealtimes. Unhelpful interactions between parents and children can be a barrier to successful weaning from tube-feeding.

It is necessary that many different professionals e.g. paediatricians, nurses, speech and language therapists and clinical psychologists work with families where there are feeding difficulties. Clinical psychologists can work with families to help reduce anxiety and improve mealtime interactions. They, along with other professionals, may record mealtimes in the family home, then review the recording with the family to highlight helpful and unhelpful interactions between parent and child and suggest ways to improve their child's feeding. Although this has been shown to be useful (Wright, Smith & Morrison, 2011), there are no structured 'tools' or checklists that help in this review of a mealtime for assessment and intervention of childhood feeding difficulties.

Aims

To develop and test a mealtime interaction clinical observation tool (MICOT) utilised during assessment and intervention in childhood feeding difficulties.

Methods

Clinical Psychologists and other health professionals took part in focus groups. They watched a recorded mealtime then discussed what was important for them to notice when considering intervention. An observation tool was developed, then used by three professionals to check for consistency between them.

Main Findings

A Mealtime Interaction Clinical Observation Tool was developed. It uses a 'traffic light' rating system that helps to identify areas of strength and areas for improvement. There was a pattern in ratings between two of the three professionals. Healthcare professionals liked the tool and reported that it could be useful.

Conclusion

The study provides a promising first version of a clinical observation tool that facilitates assessment and behavioural intervention in childhood feeding difficulties.

Practical Applications and Dissemination

This study provided a structured mealtime clinical observation tool that can be used by clinical psychologists to help them work with families with children with feeding difficulties.

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Abstract

Objective

The purpose of this study was to develop and test psychometric properties of a Mealtime Interaction Clinical Observation Tool (MICOT) that could be used to facilitate assessment and behavioural intervention in childhood feeding difficulties.

Methods

Thematic analysis of four focus groups with feeding and behaviour experts identified the content and structure of the MICOT. Following refinement, inter-rater reliability was tested between three healthcare professionals.

Results

Six themes were identified for the MICOT, which utilises a traffic-light system to identify areas of strength and areas for intervention. Despite poor inter-rater reliability, for which a number of reasons are postulated, some correlation between psychologists' ratings was evident. Healthcare professionals liked the tool and reported that it could have good clinical utility.

Conclusion

The study provides a promising first version of a clinical observation tool that facilitates assessment and behavioural intervention in childhood feeding difficulties.

Introduction

Feeding Difficulties

The term 'feeding difficulties' describes a wide range of presentations ranging from 'fussy eating' to complex medical diagnoses that require enteral feeding ('tube-feeding') to provide nutritional intake for adequate growth and development (Arts-Rodas & Benoit, 1998). Examples of such medical diagnoses include neurological deficits (e.g. cerebral palsy), anatomical abnormalities, congenital or acquired defects (e.g. of the oral cavity, trachea or oesophagus), chronic illnesses (e.g. gastroesophageal reflux, cardiac and lung problems) or genetic or metabolic disorders (e.g. Downs syndrome, phenylketonuria) (Arts-Rodas & Benoit, 1998). In many cases, it is anticipated that the requirement for tube feeding will be temporary, during a medical crisis when a child's nutrition cannot be met through oral intake (Schauster & Dwyer, 1996). Despite this intention, resistance to weaning (moving from tube feeding to oral feeding) has been described where there can be considerable stress and anxiety for families (Senez et al., 1996; Mason et al., 2005). In their critical review of 34 studies (sample sizes ranging from one - 100), Mason et al. (2005) report that parents become highly anxious that their child may not maintain weight gain and growth through oral intake alone. This can lead to maladaptive mealtime interactions, which inhibit successful transition. Given the fundamental task of feeding to deliver adequate nutrition for growth and development, it is understandable that parental anxiety and family stress has frequently been found to accompany a variety of feeding difficulties in children. Parent-child interactions in feeding difficulties have been shown to be negative (Davis, Bruce, Cocjin, Mousa & Hyman, 2010), resulting in maladaptive child feeding behaviour and feeding accomplishment. This multifactorial nature of feeding difficulties therefore necessitates multidisciplinary assessment and treatment.

The role of mealtime environment and parent-child interaction has long been recognised as an important factor in the maintenance of feeding difficulties (Arts-Rodas

& Benoit, 1998) and a key area for treatment. In their article providing professionals with a developmentally based behavioural approach to weaning. Schauster and Dwyer (1996), a clinical specialist and Nutrition Centre director, described a four step process of weaning from tube to oral feeding. They suggested that until an appropriate feeding relationship is established, the transition to oral feeding will be compromised, thereby increasing risks of problematic eating behaviours and later eating dysfunction. Given the importance of parent-child feeding interactions and the emotional environment in feeding difficulties, it is understandable that behavioural treatment approaches are indicated in childhood feeding difficulties. Miller et al. (2001) report that empirically based behavioural feeding interventions have been well documented in the literature. Clinical Psychologists are therefore ideally placed within a multi-disciplinary treatment team working with this population, to apply their understanding of psychological theories to develop holistic formulations of feeding difficulties with colleagues from other disciplines. Their formulations then guide empirically based individualised treatment plans to address the family's emotional environment and parent-child interactions that serve to maintain feeding difficulties.

Psychologically based treatment in feeding difficulties

Behavioural treatments based on learning theories including classical and operant conditioning and social learning theory, have frequently been reported to be effective in the management of paediatric feeding difficulties. In their systematic review of psychological interventions for paediatric feeding difficulties, Lukens and Silverman (2014) and the review in chapter 1, conclude that behavioural interventions for this population is supported.

The Role of the Clinical Psychologist in Intervention

Wright, Smith & Morrison (2011) describe a multi-disciplinary feeding team providing management of 'hard to wean' children. This management includes psychological input to improve mealtime interactions and relieve parental anxiety. Clinical Psychologists review, with parents, a recorded mealtime to help them recognise the impact of their handling of meal times on the child's behaviour and to identify effective strategies they could adopt.

Despite the literature suggesting that behaviour management strategies should be utilised (Lukens & Silverman, 2014) and evidence that this is being translated to clinical practice (Wright et al., 2011) there is little literature to outline a prescribed or structured way to carry out observations of family mealtime interactions.

Current Mealtime Coding Systems

A number of mealtime coding systems or observation tools have been utilised in research studies. Some examples include The Mealtime Observation Schedule (MOS; Sanders, 2009), The Mealtime Family Interaction Coding System (MICS; Dickstein, Hayden Schiller, Seifer & San Antonio, 1994) and The Family Mealtime Q-Sort (Kiser, Medoff, Black, Nurse & Fiese, 2010). These observation schedules are shown to successfully differentiate parent-child feeding interactions in problem and non-problem eaters (Sanders, Patel, Le Grice & Shepherd, 1993) and distinguish clinically relevant dimensions indicative of healthy and unhealthy functioning (Speith et al., 2001). However, they provide an overall description of strengths and problem areas, rather than lead the observer to the appropriate focus for the evidence based treatment of behavioural management i.e. reinforcements of desirable and undesirable behaviour and modelling. Furthermore, using these types of coding systems while 'rating' a mealtime can be time consuming. For both these reasons, coding systems like these,

although capable of differentiating between problem and non-problem mealtimes, are not readily utilised in clinical practice.

Aim

The development of new valid and reliable measures can be time consuming with many factors to consider (Holmbeck & Devine, 2009). While it was desired to develop an observation tool that is robust, reliable and valid, it was also important to consider the benefits of being able to develop a tool timeously for use by those currently working without a structured tool. This pilot study therefore aimed to develop a Mealtime Interaction Clinical Observation Tool (MICOT), underpinned by learning theories that could be used to facilitate assessment and behavioural intervention in families with children with feeding difficulties.

Methods

This study followed an iterative process. Four focus groups with feeding and behaviour experts were carried out to develop the content and structure of the MICOT, each focus group building on the previous. This iterative process of observation, draft and refinement has been utilised successfully in development of the Mealtime Social Interaction Measure for Long-Term Care (MSILTC); an observation measure for adults in long-term care (Keller, Laurie, McLeod & Ridgeway, 2012). In this study, participant observations were conducted in the dining room of a care home to investigate the types of mealtime social interaction that occurred as well as the social and physical environment, including staff. Based on this exploratory work, a standardized observational tool was developed. Dimensions were further expanded and refined during an iterative development of the MSILTC. Specifically, definitions for these dimensions were developed and revised based on input from further observers.

The approach of thematic analysis of focus groups has been used successfully in the development of a measure of epilepsy outcomes and a depression scale for individuals with learning disability (Espie et al., 2001; Cuthill, Espie & Cooper, 2003). The MICOT then underwent field testing and psychometric analysis.

Development of the MICOT

Four focus groups, lasting between 1 and 1.5 hours, at approximately two week intervals, were conducted by the primary researcher. Focus group guidance (Flick, 2014) and a previously developed protocol was followed (Appendix 2.1). Healthcare professional participants were tasked with observing a recorded mealtime as if they were the clinician who would then carry out a behavioural intervention based on their observations. Following the observation of the mealtime, which typically lasted between 15 and 25 minutes, participants were asked to discuss the mealtime, with particular reference to what they were looking for that would guide their behavioural intervention with the family. Focus groups were voice recorded, then transcribed for later analysis.

The first and second focus groups each consisted of four paediatric clinical psychologists. This ensured expertise in child behaviour and parent-child interactions within the context of physical health difficulties. The third focus group consisted of a speech and language therapist (SALT), a dietitian, and two paediatricians working in the feeding clinic. This ensured an opportunity for other aspects of the mealtime to be considered. The final focus group consisted of four clinical psychologists who had already participated in one of the previous focus groups, to allow for final comments on the MICOT's content and structure before field testing.

A process of thematic analysis as proposed by Braun and Clarke (2006) was used to analyse and code data to identify themes related to the content and structure of the MICOT. Themes related to the behavioural observations and structure were identified and these were used to develop the first version of the MICOT (MICOTv1: Appendix 2.3).

MICOTv1 was introduced to the second focus group and used to facilitate the observation task. Similar protocol were followed and the resulting data was analysed thematically to produce a second version (MICOTv2). MICOTv2 was similarly used in

the third focus group and thematic analysis was completed again, leading to MICOTv3. MICOTv3 was used in the final focus group of clinical psychologists familiar with the process by this stage. Thematic analysis of this final focus group allowed final refinements to be made to the MICOT (MICOTv4), which was then used in field testing. Appendix 2.2 outlines this iterative process.

Field testing and psychometric properties

Field testing of the MICOTv4 was conducted by the primary researcher (a trainee clinical psychologist), a clinical psychologist and a dietitian. They had both taken part in the focus groups and so were familiar with the purpose of the MICOT. A dietitian was included at this stage as it was considered valuable to explore the possibility of healthcare professionals other than clinical psychologists using such an observation tool. Many healthcare professions commonly use outcome measures; if inter-rater reliability across different professions was supported, there may be scope for professionals other than clinical psychologists to use the MICOT. Nine mealtime recordings were independently observed using the MICOT and ratings completed. A Fisher's z-test for Pearson Correlation was used to calculate the sample size to explore association between raters, using the SAS v9.3 programme. It was assumed that good agreement between raters would produce a correlation of 0.8, the alternative hypothesis (Field, 2013). As such, the power calculation made using a two-tailed test (alpha = 5%, power of 80%) produced an estimated sample of 9 recordings to be rated independently by two or more raters.

Inter-rater reliability

Cohen's Kappa calculations were completed to test for inter-rater reliability. Cohen's Kappa was employed as it is a statistic that measures inter-rater agreement for categorical data, and is considered a more robust measure than simple percent

agreement, since it takes into account the agreement occurring by chance (Landis & Koch, 1977). Cohen's Kappa K ranges from -1 to 1, with values around 0 indicating no agreement and values closer to -1 and 1 indicating strong agreement. As a rule of thumb values of Kappa from 0.40 to 0.59 are considered moderate, 0.60 to 0.79 substantial, and ≥ 0.80 outstanding (Landis & Koch, 1977).

Content Validity

Content validity, the extent to which the measure covers all facets of the construct is considered to be subjective. However, given the methods used to develop the MICOT i.e. thematic analysis of data gathered by experts in the field of childhood feeding difficulties and behaviour, content validity is supported.

Recruitment of Participants

Eight clinical psychologists, one SALT, one dietitian and two paediatricians participated in the focus groups, while a clinical psychologist and dietitian, who had both participated in focus groups, joined the primary researcher in field testing. All participants were female with the exception of the dietitian. Consent was sought via email communication, which included an information sheet and consent form (Appendix 2.4).

Recorded mealtimes were required for use in the focus groups and for field testing. Consent was sought by letter, information sheet and consent form (Appendix 2.5), from families who had previously been clients of a feeding team and who had at least one mealtime recorded during routine clinical care. These families had consented to their mealtime recording being kept for teaching and training purposes. Fourteen families (8 males, 6 females; 1 year 8 months - 9 years) provided consent. Nine videos were selected (6 males, 3 females; 2 years 2 months - 5 years 2 months). A narrower age

range was chosen to reduce the developmental diversity of the sample and increase sensitivity of the themes identified and items generated. This age range was representative of the feeding team's clinical population and so the resulting tool was likely to have more clinical utility.

The NHS Research Ethics Committee and NHS Greater Glasgow and Clyde Research and Development Department granted ethical approval (Appendix 2.6).

Results

Development of the MICOT

Following the iterative process described previously, voice recordings of the focus groups were transcribed and then analysed to identify themes (Appendix 2.7 provides a transcript excerpt).

Focus group 1

Thematic analysis of the first focus group identified many behaviours and interactions (items) that were seen, or would be looked for when observing a mealtime for the purpose of behavioural intervention to improve feeding. Items were grouped into five 'themes': the meal; environment - people, physical; behaviour in parent; behaviour in child. Below is a small selection of quotes from focus group 1 that illustrate examples of items within identified themes:

B - "It was a long time to eat egg, you know. If there was some finger food there as well, so that there was a bit of a mix of things for her to eat" (the meal)

A - "I think I was really struck at the beginning that she was just sitting on her own at a kids table eating in the living room" (environment - physical and people)

B - "I mean at least she was at the right...the table was at the right height and things like that, which was positive" (environment - physical)

C - "She seemed to quite like playing with the food as well, like, touching it with her hands" (child behaviour)

A - "... when you're giving praise label it and say, you know what it is that she's doing well or what it is that you'd like her to do" (parent behaviour)

D - "Yeah I think that was one of my main observations... non-specific praise, and comments you could definitely feedback" (parent behaviour).

*(*A, B, C, D represent individual clinicians).*

Appendix 2.8 contains a comprehensive list of the items and themes identified in each focus group. Using these themes and example observations in each, MICOTv1 was produced (Appendix 2.3).

Focus group 2

Thematic analysis of the second focus group identified much of the same behavioural observations and interactions. It also revealed the theme of the emotional tone of the meal and the importance of noticing and commenting on this during a clinical intervention. There was much discussion suggesting that 'behaviour in parent' and 'behaviour in child' should not be considered separate themes; rather, they be considered as one 'parent-child interaction' as one did not happen without the other. This was taken into account when developing MICOTv2. This group, having used MICOTv1, also commented that it was difficult to take notes in the correct 'sections' of the tool and many of the participants took free hand notes, then populated the tool afterwards. Based on the themes identified thus far with the addition of emotional environment, the second version, MICOTv2, was produced (Appendix 2.3).

Focus group 3

Contrary to what may have been expected, focus group three, consisting of non-psychologist feeding experts, did not reveal any new themes. It did however identify further items within already existing themes (Appendix 2.8). MICOTv3 was then developed (Appendix 2.3). It was decided at this stage to include a 'measure' for a number of reasons. Firstly, the study intended to be able to test inter-rater reliability. It was considered advantageous to develop a tool that facilitated consistency across professionals and a scale would be necessary to measure this. Furthermore, measurements across time could monitor change. The inclusion of a scale at this stage in the process allowed for comments from the fourth and final focus group, before final refinements were made for field testing. The research team agreed that a numeric visual analogue scale be used to rate each theme on MICOTv3. These are

common in healthcare measures e.g. measuring pain in children and adolescents, and can demonstrate good test-retest reliability, internal consistency, reliability and construct validity (Sherman, Eisen, Burwinkle & Varni, 2006). The previously discussed Mealtime Family Interaction Coding System (MICS; Dickstein et al., 1994) also uses a visual analogue scale to rate main areas of the mealtime, while providing indications of 'clinical range' and 'healthy range'. As the purpose of the MICOT was to identify areas for intervention, an overall total score seemed redundant here, rather 6 subscale scores allowed for easier identification of areas for intervention.

A 'traffic light' colour coding system was introduced to the scale. This allowed for the MICOT to describe what an optimum (green) meal would look like and a green score would indicate that this aspect of the mealtime was functioning well and little, if any changes would be required. An amber score would indicate that there are areas for development, but that there are also positive aspects in this area. A red score would indicate that this aspect of the mealtime was a significant area of difficulty, and would likely be a main focus of intervention i.e. there are very little, if any aspects of this area of the mealtime would be considered optimum. A six point scale was introduced (two in each colour category) to facilitate rating each mealtime theme to a broad category (red, amber, green) while allowing for variation within these.

It was decided by the research team that for this version of the MICOT (MICOTv3), 'behaviour in parent' and 'behaviour in child' be re-introduced. It was agreed that separating behaviours in parent and children would facilitate behavioural intervention more readily.

Focus group 4

Thematic analysis of the final focus group, again, did not reveal any new information or themes, confirming that saturation had been reached. Although a pre-determined number of focus groups had been agreed upon for this study, regardless of whether saturation had been reached, it is encouraging that this is indicated in the results of the

thematic analysis. The term 'saturation' in thematic analysis has in fact become the gold standard by which purposive sample sizes are determined in health science research (Guest, Bunce & Johnson, 2006). Final refinements to the tool were made, with the inclusion of an instruction page, space for freehand notes, sections related to themes and a final summary section. Figure 1 illustrates the MICOTs embedded measure while Appendix 2.3 contains the full MICOTv4.

Figure 1: MICOTv4 measure

The Meal					
Cues given to the child to signal the beginning and end of the meal Appropriate amount / size / type of food for developmental stage was given A drink provided where appropriate If other food was used as an incentive to encourage eating the meal, this was consistent and appropriate All or most of the meal was eaten in an appropriate amount of time. Food was offered at an appropriate pace for the child so as to allow enough time to try food / not feel forced or rushed.					
1	2	3	4	5	6
Environment - People					
Family are sitting together, all engaging in mealtime There is opportunity for eye contact and engagement with parent / other family members Roles at mealtime are clear and consistent with one main carer facilitating the child's eating There is relaxed conversation between family members, which is both food and non-food related.					
1	2	3	4	5	6
Environment - Physical					
The child is at a table and chair of an appropriate height They are able to engage with the parent facilitating the mealtime The child is using appropriate cutlery / crockery / hands - and is not distressed by any mess When required, appropriate help is offered to the child Distractions are removed or limited eg.TV switched off					
1	2	3	4	5	6
Environment - Emotional					
Atmosphere during the meal is relaxed and family members appear to be enjoying mealtime There are no negative or uncomfortable emotions expressed / felt during the mealtime (by the family or by you)					
1	2	3	4	5	6
Behaviour in Parent					
Sits with and engages with child during meal with non-food conversation Descriptive commenting, specific praise, Verbal encouragement and gestures, Gives specific direction Models appropriate behaviour, offers appropriate level of help with meal Expectations and communications are appropriate for developmental stage, uses visual cues where necessary					
1	2	3	4	5	6
Behaviour in Child					
Child is enjoying mealtime / exploring food, Concentrating on meal / sitting nicely Enjoying interaction with parent, Looking for direction from parent Eating food / finished meal					
1	2	3	4	5	6

Clinical Utility

Focus group data suggest that the tool was well liked and could have utility in the clinical setting. Table 1 reports some example statements from the final focus group that supports this notion.

Table 1: Excerpts from final focus group supporting clinical utility

A - "I liked the tool. I think I used all bits of it apart from the summary at the end... I liked the set up of having the paper to write freehand the observations and then put it into the sections and making a rating, and I thought if I was using this with a family, this tool would just be really helpful, and I've a full session worth of stuff to talk about with them"

B - "It was really quick, wasn't it, it was a really quick way to pull it all together, you know because normally, you'd do your notes, and then you might read them, and come back to the family, so it was good to...it felt like you could do it all together and just get it done there"

B - "Having the questions means that, if you had a lot of videos to do, and you had trainees or something, you would be getting reports from trainees that were very similar to the ones that you'd be writing, because it makes sure they'd cover everything, so it'd be useful"

C - "I think it's a really clear way to think about it (mealtime) and to make sure you're not missing any area that you could feed back on as well, so I think that's really helpful. I liked the questions, and it really did guide what I put down as well. I don't think there would be anything that I would think is missing from that"

C - "It would help you to write a report afterwards as well, it gives a good structure and makes it quite straight forward to transfer that into a report, which would be nice"

D - "I think I could see different disciplines using this because I think, none of the questions and prompts are new to me, but I think for other people who don't do as much as this, they'd be really useful questions and prompts"

B - "Yeah see I gave a red for environment, and that felt a little harsh, but then it's subjective isn't it? But it's useful to make you think, right, where's my intervention going to be?"

A - "Going back to the numbers, it is subjective, if you were doing it pre-and post it would be fine, there might be differences between people"

D - "I think having the red / amber / green, because people use it all the time, is probably an okay way to use it, I don't think parents would feel too blamed".

** A, B, C, D represent individual clinicians.*

Table 1 provides examples of views expressed by four clinical psychologists (CP) during focus group 4. It can be seen that, from their experience, these CPs thought the tool was useful in facilitating their assessment of the recorded mealtime in a number of ways. The prompts on the page provided reminders for what to look for during the assessment, so that valuable information was not missed. There were suggestions these prompts could facilitate healthcare professionals other than CPs using this tool to assess recorded mealtimes. Others mentioned that using the MICOT was likely to save time as it would reduce duplication of work and facilitate report writing where necessary. Consistency across clinicians was mentioned when suggesting that trainee CPs could potentially use the MICOT to rate recorded mealtimes. It was thought that the prompts and structure that it provides would ensure a trainee CP could assess and produce a report similar to that of a qualified CP. Lastly, there was mention of the traffic light rating system. It was suggested that, as this is a familiar categorisation system (it is frequently used to indicate child behaviour at school and has become widely used in food labelling), it is possible that this information could be shared with parents, presumably to help them understand the assessment findings in a non-judgemental way.

Psychometric Analysis

Inter-rater reliability

The primary researcher, a trainee clinical psychologist (TCP), a clinical psychologist (CP) and a dietitian used the MICOT (MICOTv4) to independently observe and rate nine mealtimes. Mealtimes selected for rating (6 male, 3 female; 2 years 2 months - 5 years 2 months) provided a good representation of a typical family that would likely be referred to the feeding clinic. Some illustrated a parent - child dyad while others depicted whole families eating together. It was felt by the raters that there was enough variety in the videos to ensure all necessary behaviours and interactions were captured. Figure 2 illustrates a graphical representation of the ratings given by each

rater across the six themes for each of the recorded mealtimes.

Figure 2: Graphical representation of ratings

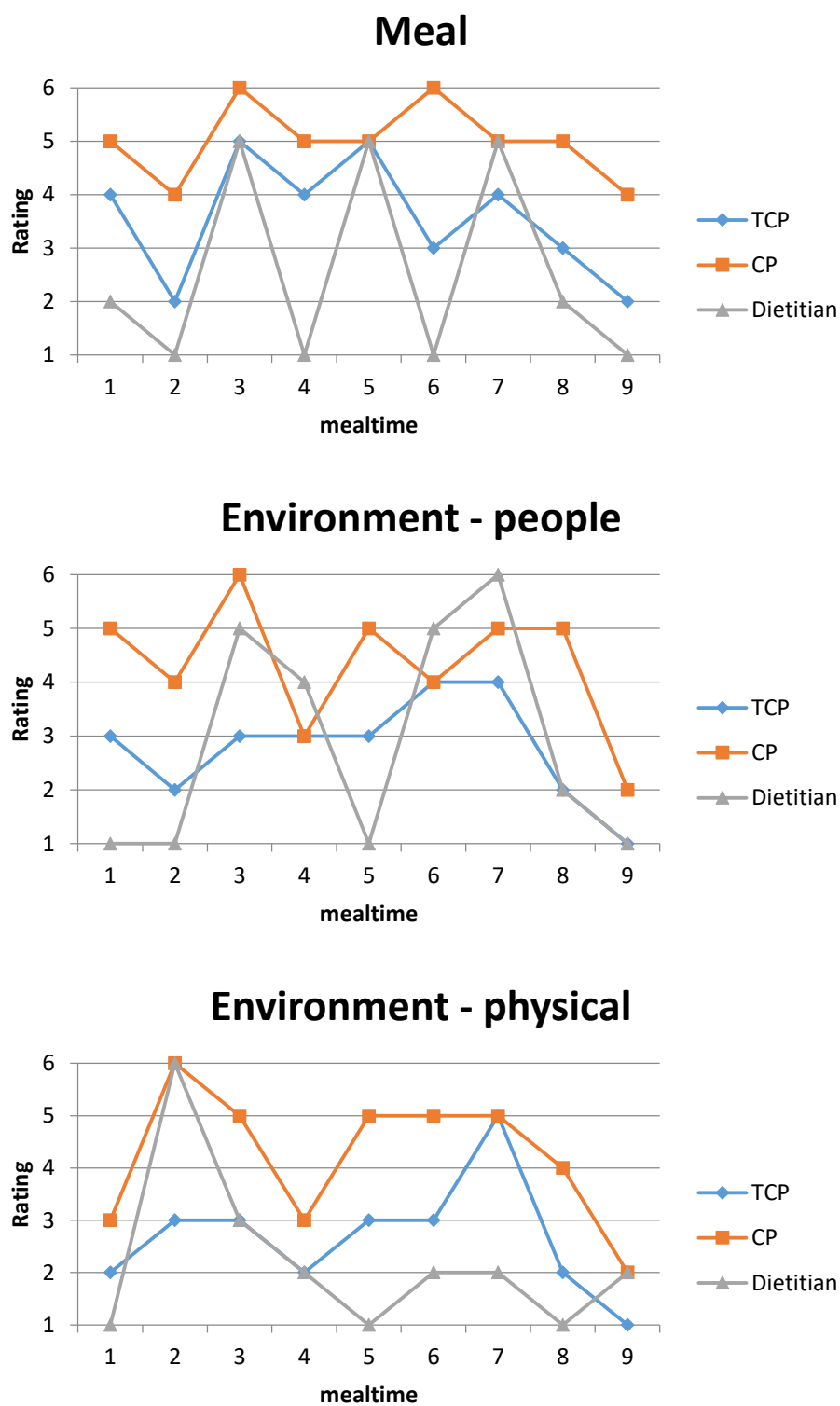
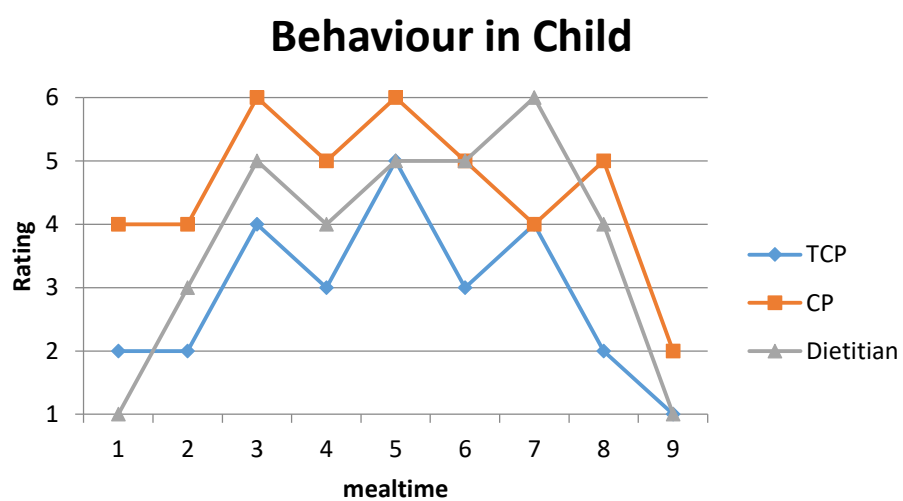
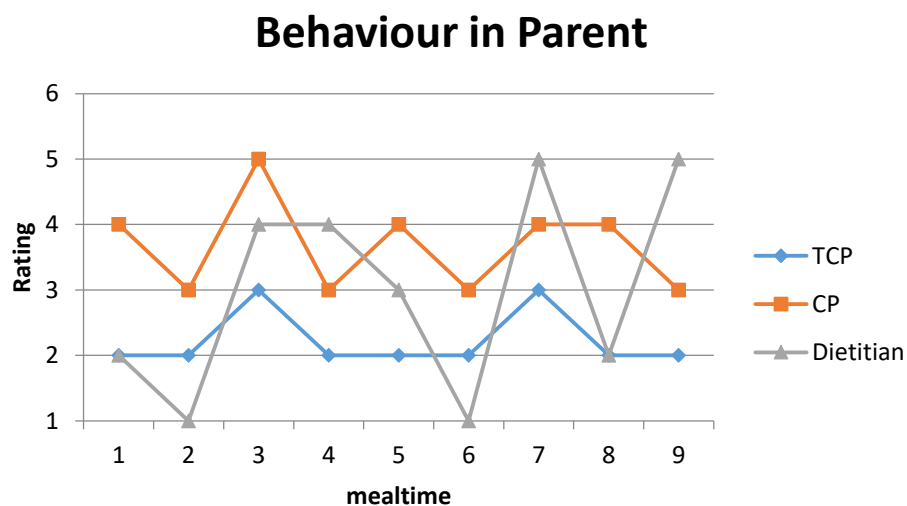
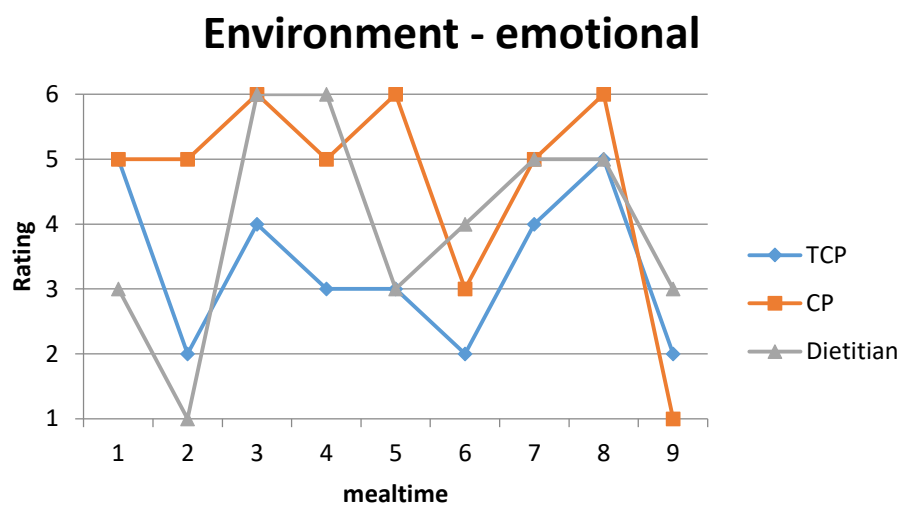


Figure 2: continued



Although Figure 2 illustrates that there were few occasions that raters agreed on a numerical value, a pattern to the ratings can be seen. There appears to be a relationship between the TCP and CP ratings. Using 'behaviour in child' as an example to illustrate this point, across the nine videos, TCP and CP consistently rate the recordings in the same pattern, 2 points away from one another for 6 of the 9 mealtimes, one point away for 2 mealtimes and a similar rating for one mealtime. The CP tended to rate the recordings higher overall than the TCP. This is encouraging in that, although there is not absolute agreement, the relationship between ratings indicate a similar impression of the mealtimes, just that the CP tended to rate higher overall. Table 2 illustrates this point.

Table 2: Proportion of colour category ratings

Rater	Colour Category		
	Red (n, %)	Amber (n, %)	Green (n, %)
Dietitian	25, 46%	12, 22%	17, 32%
TCP	23, 43%	25, 46%	6, 11%
CP	4, 7%	20, 37%	30, 56%
* TCP = Trainee Clinical Psychologist, CP = Clinical Psychologist			

The TCP was more likely to rate red (43%) or amber (46%) while the CP was more likely to rate amber (37%) or green (56%). This pattern can be seen to a greater or lesser extent across each of the themes of the mealtimes. The dietitian appears to be less in line with the ratings of the TCP and CP (Figure 2). This may be expected, as the dietitian is likely to have a different level of knowledge and training to the TCP and CP, who will have had similar training, particularly in relation to conducting observations of family interactions and behaviour.

Figure 2 also illustrates that the tool was able to facilitate the discrimination between

areas for intervention and less priority areas within one mealtime. For example, the CP in mealtime 9 identified 4 (red) areas for intervention: environment: people, physical and emotional and child behaviour, while there was evidence that the meal and parent behaviour had more positive aspects (amber).

Inter-rater reliability was assessed by Cohen's Kappa and is reported in Tables 3 and 4. As little agreement can be seen between raters in Figure 2, it is not surprising that Cohen's Kappa calculations indicate poor agreement between raters. When considering agreement between raters in the colour categories, agreement is improved, but remains in the poor range (highest K = 0.286) (Landis & Koch, 1977).

Table 3: Inter-rater reliability of MICOT measure

MICOT measure theme	Cohen's Kappa K		
	TCP& CP	TCP& Dietitian	CP & Dietitian
Meal	-0.108	0.113	0.045
Environment - People	0.113	0.137	-0.174
Environment - Physical	-0.091	-0.016	0.149
Environment - Emotional	-0.014	0.087	0.000
Behaviour in Parent	-0.110	0.031	-0.209
Behaviour in Child	-0.043	0.100	-0.125
* TCP = Trainee Clinical Psychologist, CP = Clinical Psychologist			

Table4: Inter-rater agreement of MICOT measure colour categories

MICOT measure theme	Cohen's Kappa K		
	TCP& CP	TCP& Dietitian	CP & Dietitian
Meal	-0.105	0.286	0.100
Environment - People	0.100	0.250	0.244
Environment - Physical	-0.050	0.250	0.045
Environment - Emotional	0.100	0.000	0.250
Behaviour in Parent	-0.108	0.234	-0.145
Behaviour in Child	0.100	0.211	0.280
* TCP =Trainee Clinical Psychologist, CP = clinical psychologist			

Summary of results

A Mealtime Interaction Clinical Observation Tool (MICOT), including six mealtime themes and corresponding measure, has been developed through an iterative process of thematic analysis, draft and refinement. The tool was found to be effective at facilitating mealtime observation for the purposes of assessment and behavioural intervention in childhood feeding difficulties. Those who used the tool during the study have supported clinical utility. Although inter-rater reliability was found to be poor at this stage, a pattern to ratings was evident which suggested that the TCP and CP ratings were more closely correlated with one another than with the dietitian.

Discussion

It is posited that the development of this MICOT provides a promising first version of a clinically useful Mealtime Interaction Clinical Observation Tool. Within the limited scope of this study, a number of achievements have been made. It is likely that the identified themes of the mealtime are relevant given the method of thematically analysing multiple focus groups with behaviour and feeding experts. Engaging these professionals in the utilisation of the MICOT during the development phase allowed for feedback and refinement to take place. The MICOT provides a structured, consistent way of observing mealtimes and was reported to be a clinically useful tool that participants were keen to use in clinical practice. This is an important outcome, as before this study, there were no structured observation tools in use in the clinical setting, resulting in potential inconsistencies across clinicians working with families with feeding difficulties.

Although better inter-rater reliability would have allowed for more confident conclusions to be made about the MICOT's reliability, the correlation of ratings between the TCP and CP in particular, indicate that the tool is able to facilitate and demonstrate similar assessments of mealtimes across individuals. As illustrated, its ability to discriminate between areas for intervention and well functioning areas of a mealtime suggest that this tool can facilitate targeted behavioural intervention. This supports the MICOTs clinical utility for the purposes it was developed.

As previously mentioned, the dietitian appeared to rate less in line with the TCP and CP. Given that the task involves observing and making judgements about individual's behaviour and interactions within a behavioural learning theory context, it is possible that the similar training experienced by the TCP and CP, with more emphasis on human behaviour and interaction, can explain these results. There are a number of improvements that could be made to future versions that may reduce the subjectivity of ratings and therefore increase inter-rater reliability. While the instructions in the final

version of the MICOT were intended to facilitate similarity across raters, it is possible that this was not enough to influence individual interpretations of these instructions. Within each of the six aspects of the meal, the embedded measure in the MICOT provides descriptions of what an optimal, or 'green' meal would look like in that mealtime area. However, it then relies on the individual rater to decide, using only their own clinical judgement, what a 'red' and 'amber' meal would look like for each aspect of the mealtime. Future versions of the MICOT should therefore aim to provide more specific descriptions of each of the ratings on the visual analogue scale within the 'red', 'amber' and 'green' categories for each of the six mealtime themes. The Mealtime Family Interaction Coding System (MICS; Dickstein et al., 1994) includes detailed descriptions of each mealtime dimension across the range of ratings on its 7-point scale and was shown to demonstrate acceptable inter-rater reliability (intra-class correlations ranging from 0.62 to 0.88) when observing videotaped mealtimes (Janicke, Mitchell, Quittner, Piazza-Waggoner & Stark, 2008).

There was no period of 'training' in the use of the MICOT between its development and field testing. In hindsight, it is possible that this was an important step missed in the current study. Schnelle et al. (2009) report that training is an important aspect to the use of standardized observational measures. It was also included in the development of the mealtime social interaction measure by Keller et al. (2012), which demonstrated substantial inter-rater reliability for capturing frequency of interaction among residents and staff (kappa 0.712 and 0.790 respectively) and moderate inter-rater reliability for nature of interaction (kappa 0.590 and 0.441 respectively). It would be interesting to ascertain through future studies, if introducing a period of training and 'calibration' of raters could improve inter-rater reliability. It may be hypothesised that including this clearer anchoring on the visual analogue scale prior to introducing a period of training before rating, could all lead to improved inter-rater reliability. This is an important consideration, as good inter-rater reliability across different healthcare professionals has implications for clinical practice. In multidisciplinary teams working with childhood

feeding difficulties, a tool that can demonstrate good reliability and validity could support healthcare professionals other than CPs to complete observational assessments of mealtimes. This could lead to change in clinical practice, whereby any member of the MDT (paediatrician, speech and language therapist, dietitian), could complete this assessment with a view to engage in simple behavioural intervention or as an assessment screen prior to referral to the CP. This point brings to mind the issue of discriminant validity i.e. the ability to discriminate between mealtimes in the clinical and non-clinical range. Future research could explore the MICOTs discriminant validity and consideration could be given to identifying a clinical cut-off score in the MICOT for this purpose. This was out with the scope of this study, but if demonstrated in future research, it could support the use of the MICOT as a screening measure. Test-retest reliability, also out with the scope of this research would be an important aspect to consider in the next phase of psychometric testing. Although it is useful to know if the tool can demonstrate similar ratings between individuals and therefore consistency for families across professionals, it is also important to know that the tool demonstrates good agreement across measures at different time points by the same individual. Good test-retest reliability would support the MICOTs usefulness as an outcome measure, where mealtime assessments can be completed pre- and post- intervention.

Lastly, this study aimed to develop and test an observation tool that facilitated assessment and behavioural intervention for childhood feeding difficulties. While the tool's content validity is supported through the nature of its development and it includes many examples of behaviours to identify when considering behavioural interventions, it does not explain which specific behavioural learning theories underpin different aspects of the tool. As a result, it assumes that clinicians using the tool have a sound knowledge of behavioural learning theories to understand why each of the behaviours and environmental factors included in the tool are important in this context. Future versions of the tool could include information regarding the different behavioural learning theories that underpin the tool e.g. 'specific praise' (operant conditioning;

Skinner, 1938) and 'family are sitting together, all engaging in mealtime' (social learning theory; Bandura, 1977), to lead to improved facilitation of these behavioural interventions following assessment using the MICOT.

Limitations and future research

In this pilot study, a small sample size of nine mealtimes were rated. Despite a power calculation indicating this sample size, it is possible that it was not large enough to detect good agreement between raters.

Although data were gathered from a number of experts through focus groups and thematic analysis indicated that saturation had been reached, it should be highlighted that the healthcare participants were recruited from one particular hospital. It is reasonable to assume that this may have introduced bias to the results, as the professional and family participants were recruited from the same geographical area. Although data gathering from wider sources may have reduced the likelihood of bias of this nature, this was out with the scope of the current study.

Future research should consider the inclusion of the suggested greater specificity of rating criteria, clearer anchoring on the visual analogue scale, stronger links to the underpinning behavioural learning theories and the introduction of a period of training, before testing the psychometric properties previously discussed to further support the MICOTs clinical utility. Future studies may wish to employ a larger sample size of mealtimes to ascertain if this has influenced the inter-rater reliability results found here. Good inter-rater reliability could support the use of the MICOT as a screening measure by other professionals as well as confirming a consistent service provision for families. Good test-retest reliability could support the use of the MICOT as an outcome measure.

Lastly, given that the purpose of this tool is to facilitate behavioural intervention with

families where a child has feeding difficulties, it may be important to gather families' experience of the MICOT being used in clinical practice to facilitate assessment and intervention or as an outcome measure.

Clinical Applications

This study has developed a promising first version of a Mealtime Interaction Clinical Observation Tool that can be utilised in clinical practice to facilitate assessment and behavioural interventions for childhood feeding difficulties.

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Appendices

Appendix 1.1: Instructions to authors

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MANUSCRIPT PREPARATION

Instructions to Authors

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(a) The academic degrees of authors should be placed on the title page following their names, and

(b) a structured abstract of not more than 150 words should be included. The abstract should include the following parts:

- (1) Objective (brief statement of the purpose of the study);
- (2) Methods (summary of the participants, design, measures, procedure);

- (3) Results (the primary findings of this work); and
- (4) Conclusions (statement of implications of these data).

Key words should be included, consistent with APA style. Submissions should be double-spaced throughout, with margins of at least 1 inch and font size of 12 points (or 26 lines per page, 12-15 characters per inch). Authors should remove all identifying information from the body of the manuscript so that peer reviewers will be unable to recognize the authors and their affiliations. E-mail addresses, whenever possible, should be included in the author note.

Informed consent and ethical treatment of study participants. Authors should indicate in the Method section of relevant manuscripts how informed consent was obtained and report the approval of the study by the appropriate Institutional Review Board(s). Authors will also be asked to sign a statement, provided by the Editor that they have complied with the American Psychological Association Ethical Principles with regard to the treatment of their sample.

Clinical relevance of the research should be incorporated into the manuscripts. There is no special section on clinical implications, but authors should integrate implications for practice, as appropriate, into papers.

Terminology should be sensitive to the individual who has a disease or disability. The Editors endorse the concept of "people first, not their disability." Terminology should reflect the "person with a disability" (e.g., children with diabetes, persons with HIV infection, families of children with cancer) rather than the condition as an adjective (e.g., diabetic children, HIV patients, cancer families). Nonsexist language should be used.

Special instructions for types of manuscripts

(1) *Treatment studies/Randomized controlled trials:* If you are submitting a manuscript of a **randomized clinical trial** to JPP, you are required to submit a flowchart of your research showing the steps found in the Consort E-Flowchart. This should be submitted as a figure. The Consort E-Flowchart and a checklist of items to be included when reporting a randomized trial can both be found on <http://www.consort-statement.org> Please clearly indicate the page numbers where each checklist item is reported in the manuscript. Please upload this checklist as supplementary material when you submit your manuscript for consideration.

(2) *Case Studies:* Although there may be some exceptions, most case studies should be sent to Clinical Practice in Pediatric Psychology (CPPP). Single-subject studies that employ rigorous A-B-A-B designs and/or statistical strategies can be sent to JPP. All others will probably fit better with CPPP. Case reports should not exceed 20 pages. Case reports are appropriate to document the efficacy of new treatment applications; to describe new clinical phenomena; to develop hypotheses; to illustrate methodological issues, difficult diagnoses, and novel treatment approaches; and to identify unmet clinical or research needs. Guidelines for case study submissions can be found in Drotar, D. (2009). Editorial: Case Studies and Series: A Call for Action and Invitation for Submissions, *Journal of Pediatric Psychology*, 34, 795-802; Drotar, D. (2011). Editorial: Guidance for Submitting and Reviewing Case Reports and Series in the *Journal of Pediatric Psychology*, 36, 951-958.

Guidelines for Single Subject Studies: Please read Rapoff, M. & Stark, L. (2008). Editorial: *Journal of Pediatric Psychology* Statement of Purpose: Section on Single-Subject Studies.

(3) *Measurement development and validation articles*: For additional guidance please read, Holmbeck, G. & Devine, K. (2009) [Editorial: An Author's Checklist for Measure Development and Validation Manuscripts](#).

(4) *Review articles*: Please consult the recent editorial ([New Guidelines for Publishing Review Articles in JPP](#)) which describes new guidelines for review articles, and the [Checklist for Preparing and Evaluating Review Articles](#).

a) *Topical reviews*: Topical reviews summarize contemporary findings, suggest new conceptual models, or highlight noteworthy or controversial issues in pediatric psychology. They are limited to 2,000 words, contain no more than 2 tables or figures, and have an upper limit of 30 references. Supplementary online material (e.g., additional tables) may be considered on a case by case basis.

b) *Systematic reviews*: Systematic reviews should not exceed 30 pages. Authors are required to attach the PRISMA checklist and flow diagram as supplementary material for each submission. Authors can find the PRISMA checklist and flow diagram in downloadable templates that can be re-used at this URL, <http://www.prisma-statement.org/statement.htm>. Authors of systematic reviews that do not include a meta-analysis must provide a clear statement in the manuscript explaining why such an analysis is not included for all or relevant portions of the report.

(5) *Commentaries*: Commentaries are invited on all topics of interest in pediatric psychology, and should not exceed 4 pages, including references.

(6) *Historical Analysis in Pediatric Psychology* is a special series of papers devoted to the history of pediatric psychology. Authors interested in submitting a paper for this series should contact the Editor of JPP to discuss potential papers prior to submission. There is no deadline for these papers (they may be submitted anytime). All submissions will be peer reviewed and should comply fully with the JPP Instructions to Authors. Papers in this series should be tightly focused contributions that expand our understanding of the roots, evolution, and/or impact of pediatric psychology as a discipline. Manuscripts may focus on the influence of individuals, published works, organizations, conceptualizations, philosophies or approaches, or clinical and professional activities. Successful papers should articulate a clear purpose/question and develop a compelling argument for the topic. Contributions should include a breadth of coverage, such that contradictory data are included and potential biases acknowledged. Historical analysis is more than a recounting of the "facts" and should include a thoughtful and scholarly interpretation of the subject matter. Papers should rely on primary sources and must be clearly and appropriately referenced. Supplemental materials to accompany the article may be posted online.

Additional Guidance:

The following links provide additional guidance for authors and reviewers. [Editorial Policy](#), [Authors' Checklist](#), [Guidelines for Reviews](#), [Suggestions for Mentored Reviews](#), ["People First,"](#), [NIH policy](#), [Replication of research](#), [Duplicate and redundant policies](#) [Conflict of interest](#)

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Funding

Details of all funding sources for the work in question should be given in a separate section entitled 'Funding'. This should appear before the 'Acknowledgements' section.

The following rules should be followed:

- The sentence should begin: 'This work was supported by ...'
- The full official funding agency name should be given, i.e. 'the National Cancer Institute at the National Institutes of Health' or simply 'National Institutes of Health', not 'NCI' (one of the 27 subinstitutions) or 'NCI at NIH' ([full RIN-approved list of UK funding agencies](#))
- Grant numbers should be complete and accurate and provided in parentheses as follows: '(grant number xxxx)'
- Multiple grant numbers should be separated by a comma as follows: '(grant numbers xxxx, yyyy)'
- Agencies should be separated by a semi-colon (plus 'and' before the last funding agency)
- Where individuals need to be specified for certain sources of funding the following text should be added after the relevant agency or grant number 'to [author initials]'.

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Updated January 2016

Appendix 1.2: Details of Excluded studies

Study	Reason for Exclusion
<ul style="list-style-type: none"> • Bui, L.T.D., Moore, D.M. & Anderson, A. (2013). Using Escape Extinction and Reinforcement to Increase Eating in a Young Child with Autism. <i>Behavior Change</i>, 30 (1) 48-55 • Murphy, J. & Zlomke, K.R. (2016). A Behavioral Parent-Training Intervention for a Child With Avoidant/Restrictive Food Intake Disorder. <i>Clinical Practice in Pediatric Psychology</i>, 4 (1), 23–34 • Seiverling, L., Burns, J., Rodriguez, J., Yamazaki, H., Fernandez, A. & Yusupova, S. (2016). The Effects of a Brief Behavioral Intervention on Food Refusal in a Child With a Fear of Choking. <i>Clinical Case Studies</i>, 15 (2) 117–125 	Case studies (3)
<ul style="list-style-type: none"> • Blissett, J., Bennett, C., Fogel, A., Harris, G. & Higgs, S. (2016). Parental modelling and prompting effects on acceptance of a novel fruit in 2–4-year-old children are dependent on children’s food responsiveness. <i>British Journal of Nutrition</i>, 115, 554–564 • Draxten, M., Fulkerson, J.A., Friend, S., Flattum, C.F.F. & Schow, R. (2014). Parental role modeling of fruits and vegetables at meals and snacks is associated with children’s adequate consumption. <i>Appetite</i>. 78C, 1–7 • Fletcher, A., Wolfenden, L., Wyse, R., Bowman, J., McElduff, P. & Duncan, S. (2013). A randomised controlled trial and mediation analysis of the ‘Healthy Habits’, telephone-based dietary intervention for preschool children. <i>International Journal of Behavioral Nutrition and Physical Activity</i>, 10:43 	Not specific to ‘feeding difficulty’ population (4)

<ul style="list-style-type: none"> • Laureati, M., Bergamaschi, V. & Pagliarini, E. (2014). School-based intervention with children. Peer-modeling, reward and repeated exposure reduce food neophobia and increase liking of fruits and vegetables. <i>Appetite</i>, 83, 26–32 	
<ul style="list-style-type: none"> • Peterson, K.M., Volkert, V.M. & Zeleny, J.R. (2015). Increasing Self-Drinking for Children with Feeding Disorders. <i>Journal of Applied Behavior Analysis</i> 48, 436–441 	Objective: Increase Self Drinking (1)
<ul style="list-style-type: none"> • Weber, J. & Gutierrez, A. (2015). A Treatment Package without Escape Extinction to Address Food Selectivity. <i>Journal of Visualized Experiments</i>, (102) e52898 	Population and Intervention Unclear (1)
<ul style="list-style-type: none"> • Najimi, A. & Ghaffari, M. (2013). Promoting fruit and vegetable consumption among students: a randomized controlled trial based on social cognitive theory. <i>Journal of the Pakistan Medical Association</i> , 63, 1235-1240 	Evaluation of Intervention other than Behavioural Intervention (1)
<ul style="list-style-type: none"> • Seiverling, L., Burns, J., Rodriguez, J., Yamazaki, H., Fernandez, A. & Yusupova, S. (2016). The Effects of a Brief Behavioral Intervention on Food Refusal in a Child With a Fear of Choking. <i>Clinical Case Studies</i>, 15 (2) 117–125 • Sharp, W.G., Burrell, T.L. & Jaquess. D.L. (2014). The Autism MEAL Plan: A parent-training curriculum to manage eating aversions and low intake among children with autism. <i>Autism</i>, 18 (6) 712-722 	Duplicate Publications (2)

Appendix 1.3: Example Assessment of Risk of bias: Adamson et al. (2013)

Type of Bias	Entry	Judgement	Description
Selection bias	Adequate sequence generation?	Yes	Quote: 'were randomly allocated to receive the intervention immediately (n=49) or to the waitlist condition (n=47)...via a computer generated list of random numbers'
	Allocation concealment?	Yes	Quote: 'an independent third party drew a number for each participant in turn from an envelope'.
Performance bias	Blinding (participants and personnel)?	Unclear	Comment: No information available to address this outcome.
Detection bias	Blinding (of outcome assessment)?	Yes	Quote: 'Observations were analysed by a coder masked to the condition or time point of each family'.
Attrition bias	Incomplete outcome data addressed?	Yes	Quote: "Intent-to-treat analyses were conducted... pre-intervention scores carried forward for missing data."
Reporting bias	Free of selective reporting?	Yes	Comment: The study protocol is not available but it is clear that the published reports include all expected outcomes, including those that were pre-specified.
Other bias	Free of other bias?	Yes	Comment: No other sources of bias were detected

Appendix 1.4: Data Extraction table of excluded study (Wilkins et al., 2014)

Study, country	Participants	Intervention	Outcome measures	Main Findings (available statistical results included)
Design	Sample Size	Comparison	Assessment points (Attrition rates)	
<i>Intensive Day Treatments - Individual Interventions</i>				
Wilkins et al. (2014), USA	12 children with feeding problems Aged 1 - 6 years, 11 children = Day treatment, 1 = Intensive outpatient	Behavioural manipulation within subjects: Utensil manipulation, A = Treatment; Non-removal and Re-presentation of bites B = Baseline 2-5 meals per day by trained feeders, approximately 40 x 8 hour days (40 hours = 1 week) If child responded; included in outpatient therapy (1-1.5 hours per week until child is a typical feeder)	Bite acceptance Levels of expulsion Mouth clean / pack Grams consumed	Non-removal and re-presentation treatment improved feeding behaviour for 8 of 12 children. Of those 8 children: 5 had lower levels of expulsion 4 had higher levels of mouth clean Grams consumed appear to increase over time
NRS Within subject ABAB design	N = 12		Baseline Treatment conditions 3, 6, 12, 18, 24 month follow-up	

Appendix 2.1: Focus Group Guidance

Welcome

Introduce self

Purpose of Focus group

- Generate content / structure of an observation tool, based on learning theories to facilitate assessment and behavioural management of childhood feeding difficulties.

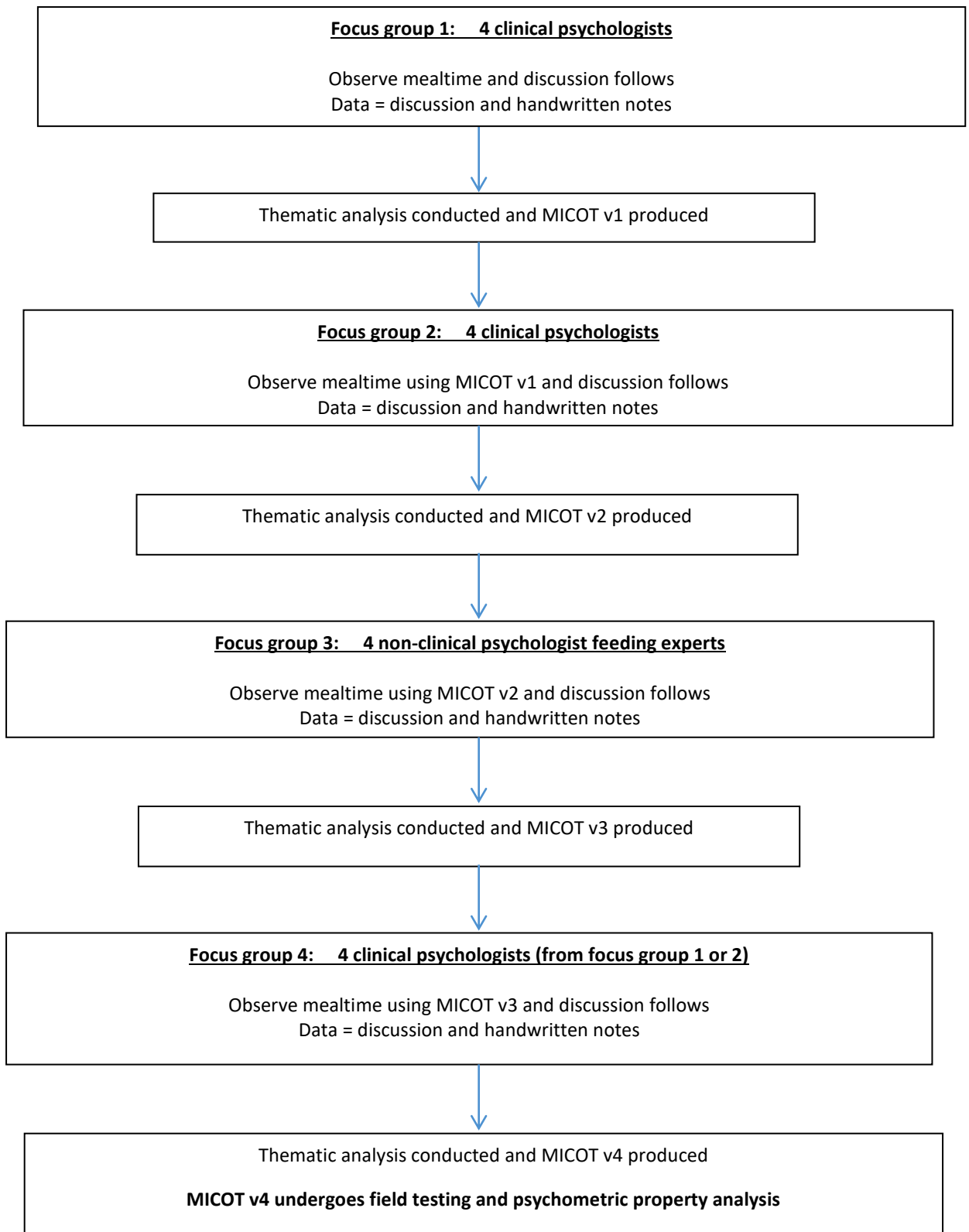
Format of focus group

- Complete an observation of a recorded mealtime with the following assumptions:
 - You are the clinical psychologist (or health professional) who will be working therapeutically with the family (assessing the mealtime)
 - Your remit will be to employ behavioural management strategies (evidence based treatment) to address the feeding difficulties
 - You may show some footage from this recording when you feedback to the family your formulation of the difficulties and your proposed strategies
- Discussion:
 - What aspects of the mealtime did you take note of?
 - What interactions did you think were important in formulating the difficulties within learning theories?
 - What would you wish to feed back to the parents?
 - How would you carry out this feedback?
 - In what way did you take notes?
 - Did you have a process / structure in your mind that you followed to help you with this task?

General points about discussion:

- We would like you to do the talking
- We would like everyone to participate.
- I may call on you if I haven't heard from you in a while.
- There are no right or wrong answers
- Every person's experiences and opinions are important.
- Speak up whether you agree or disagree.
- Confidentiality
- We will be audio recording the group, as we want to capture everything you have to say.
- We don't identify anyone by name, you will remain anonymous.

Appendix 2.2: Iterative process of draft MICOT development



Appendix 2.3: MICOT versions 1-4 (space was provided for inputting text - structure is condensed here for visual purposes)

MICOTv1

The Meal		
Time	E.g. appropriate amount / type of food for developmental stage? Was all the food eaten? How long did it take to eat the meal?	
Environment		
Time	People e.g. who is with child? Are they sitting together? Is anyone else nearby?	
Time	Physical e.g. Is child at table? At appropriate height / chair for developmental stage? Is the child using appropriate cutlery / crockery / hands?	
Behaviour in Parent		
Time	Positive e.g. Sits with child, non food related conversation with child, descriptive commenting Labelled praise, encouragement - verbal / gestures, modelling appropriate behaviour Gives specific direction Offers appropriate level of help with meal	Negative e.g. Engages in other activities / distracted / ignoring child Non-specific praise, negative comments about child Contradictory communication Inappropriate level of help with meal - too much / too little?
Behaviour in Child		
Time	Positive e.g. Enjoyment from / exploring food, Concentrating on meal / sits nicely, Enjoying interaction with parent, looking for direction, eating food / finished meal	Negative e.g. Distracted, Move away from food / table Expressing distress, throws food Not eating food
Summary and Advice		
E.g. key points / general comments about overall mealtime What will behavioural intervention look like? What are the key areas to work on with the family?		

Appendix 2.3 continued: MICOTv2

Observations	
Time	(Space provided for note taking)

The Meal	
Time	Were cues given to the child to signal the beginning / end of the meal? Appropriate amount / size / type of food for developmental stage? Was a drink provided too? Was other food used as an incentive to encourage eating the meal? Was all the food eaten? How long did it take to eat the meal? Was enough time / too much time given?
Environment	
Time	People e.g. Who is with child? Are they sitting together? Is anyone else nearby? Roles - are roles during the meal clear? Is there conversation? Between whom? Is it food related / non-food related?
Environment	
Time	Physical e.g. Is child at table? At appropriate height / chair for developmental stage? Is the child using appropriate cutlery / crockery / hands? Is appropriate help offered to the child?
Emotional Environment	
Time	What is the emotional tone / atmosphere during the meal? E.g. relaxed / tense / frustration / playful / happy / anxious / angry / flat Are different emotions expressed by different people? How does watching this mealtime make you feel?

Interactions between parent and child	
Time	<p>Does parent sit with child / attend to child or are they distracted / engaging in other activities?</p> <p>Is there non-food related conversation or is all the focus on the food and eating?</p> <p>Does parent offer descriptive commenting, specific / non-specific praise?</p> <p>Encouragement - verbal / gestures to child / other children at table?</p> <p>Is there modelling of appropriate behaviour?</p> <p>Offers appropriate level of help with meal / expect too much / too little?</p> <p>Are expectations of / communication with child appropriate for age / stage of development?</p> <p>Is the child enjoying mealtime / exploring food / concentrating on meal / sitting nicely or expressing distress?</p> <p>Enjoying interaction with parent? Looking for direction?</p> <p>Eating food / finished meal?</p>
Summary and Advice	
<p>Key points / general comments about overall mealtime</p> <p>What will behavioural intervention look like? What are the key areas to work on with the family?</p>	

Appendix 2.3 continued: MICOTv3

Time	Observations	M = meal E = enviro P = parent beh C = child beh
	(Space provided for note taking)	<div style="display: flex; justify-content: space-between; height: 748px;"> <div style="width: 33%; background-color: #f8d7da;"></div> <div style="width: 33%; background-color: #fff3cd;"></div> <div style="width: 33%; background-color: #d4edda;"></div> </div>

The Meal	
Time	<p>Were cues given to the child to signal the beginning / end of the meal?</p> <p>Appropriate amount / size / type of food for developmental stage?</p> <p>Was a drink provided?</p> <p>Was other food used as an incentive to encourage eating the meal?</p> <p>Was all the food eaten?</p> <p>How long did it take to eat the meal? Was enough / too much time given?</p> <p>Pacing of meal - appropriate pace of offering of food and enough time to try between attempts</p>
Environment	
Time	<p>People e.g. Who is with child? Are they sitting together? Is anyone else nearby?</p> <p>Is there opportunity for eye contact / interaction with parent?</p> <p>Roles - are roles during the meal clear?</p> <p>Is there conversation? Between whom? Is it food related / non-food related?</p>
Environment	
Time	<p>Physical e.g. Is child at table? At appropriate height / chair for developmental stage?</p> <p>E.g. able to make eye contact / engage with adult facilitating meal?</p> <p>Is the child using appropriate cutlery / crockery / hands?</p> <p>Is appropriate help offered to the child?</p> <p>Are distractions removed or limited eg.TV switched off?</p>
Emotional Environment	
Time	<p>What is the emotional tone / atmosphere during the meal?</p> <p>E.g. relaxed / tense / frustration / playful / happy / anxious / angry / flat</p> <p>Are different emotions expressed by different people?</p> <p>How does watching this mealtime make you feel?</p>

Behaviour in Parent		
Time	Areas of Strength e.g. Sits with child, non food related conversation with child, descriptive commenting Specific praise, encouragement - verbal / gestures, modelling appropriate behaviour Gives specific direction Offers appropriate level of help with meal Expectations and communications are appropriate for developmental stage, using visual cues where necessary	Areas of Difficulty e.g. Engages in other activities / distracted / ignoring child All focus / communication is on food Non-specific praise, Negative comments about child Contradictory communication Inappropriate level of help with meal - too much / too little? Expectations and communications are not appropriate for developmental stage Giving child attention for undesired behaviour Chasing child with food
Behaviour in Child		
Time	Areas of Strength e.g. Enjoyment from / exploring food, Concentrating on meal / sits nicely, Enjoying interaction with parent, Looking for direction, Eating food / finished meal	Areas of Difficulty e.g. Distracted, Moves away from food / table Expressing distress, Throws food, Not eating food

The Meal					
Cues given to the child to signal the beginning and end of the meal Appropriate amount / size / type of food for developmental stage was given A drink provided where appropriate If other food was used as an incentive to encourage eating the meal, this was consistent and appropriate All or most of the meal was eaten in an appropriate amount of time. Food was offered at an appropriate pace for the child so as to allow enough time to try food / not feel forced or rushed.					
1	2	3	4	5	6
The Environment					
People Family are sitting together, all engaging in mealtime There is opportunity for eye contact and engagement with parent / other family members Roles at mealtime are clear and consistent with one main carer facilitating the child's eating There is relaxed conversation between family members, which is both food and non-food related.					
1	2	3	4	5	6
The Environment					
Physical The child is at a table and chair of an appropriate height They are able to engage with the parent facilitating the mealtime The child is using appropriate cutlery / crockery / hands - and is not distressed by any mess When required, appropriate help is offered to the child Distractions are removed or limited eg.TV switched off					
1	2	3	4	5	6
The Environment					
Emotional Atmosphere during the meal is relaxed and family members appear to be enjoying mealtime There are no negative or uncomfortable emotions expressed / felt during the mealtime (by the family or by you)					
1	2	3	4	5	6
Behaviour in Parent					
Sits with and engages with child during meal with non-food conversation Descriptive commenting, specific praise, Verbal encouragement and gestures, Gives specific direction Models appropriate behaviour, Offers appropriate level of help with meal Expectations and communications are appropriate for developmental stage, uses visual cues where necessary					
1	2	3	4	5	6
Behaviour in Child					
Child is enjoying mealtime / exploring food, concentrating on meal / sitting nicely Enjoying interaction with parent, Looking for direction from parent Eating food / finished meal					
1	2	3	4	5	6

Summary and Advice
Key points / general comments about overall mealtime What will behavioural intervention look like? What are the key areas to work on with the family? Are there other professionals that could offer support to this family's mealtimes? E.g. SALT / dietetics?

Appendix 2.3 continued: MICOTv4

Mealtime Interaction Clinical Observation Tool (MICOT)											
Purpose											
<p>The MICOT has been developed to facilitate the task of observing mealtimes for assessment and behavioural intervention in childhood feeding difficulties.</p>											
How to use the MICOT											
<p>The MICOT consists of two sections: observation sheets and category prompts.</p> <p>Observation sheets are provided to allow you to take freehand notes as you watch a recorded mealtime.</p> <p>The MICOT divides the mealtime into the following six categories: The meal, Environment: Physical, Environment: People, Environment: Emotional, Behaviour in parent and Behaviour in child.</p> <p>The categories and prompts support the structuring of your notes that facilitate the identification of areas for intervention.</p> <p>MICOT measure:</p> <p>The MICOT provides a 'traffic light' system of rating the different categories of the mealtime:</p> <table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr></table> <p>On the measure, each category includes a description of an 'ideal' version of that category. i.e. if what you observed looked like the description, you would rate that category 'green'.</p> <p>Within the Red, Amber and Green measurement categories, you should then choose a score i.e. 6 is better than 5, 4 is better than 3 etc.</p> <p>Red scores (1,2) should indicate that there is little, if any positive aspects to this mealtime category and you are likely to focus your intervention in this area.</p> <p>Amber scores (3,4) indicate that this area has some positive aspects as well as some areas of difficulty that could benefit from some intervention.</p> <p>Green scores (5,6) indicate that this aspect of mealtime is going well and requires little, if any change.</p> <p>Lastly, the observation sheets provide colour coded columns at the right hand side.</p> <p>This may be used to 'star' particular key points that you know are important, or you may wish to use letters to indicate e.g. examples of 'amber' environment or 'green' parent behaviour. This is provided as an aid to finding key points, and should not be considered a necessary aspect of using the MICOT.</p>						1	2	3	4	5	6
1	2	3	4	5	6						

Time	Observations	M, E, P, C,*		

The Meal	
Time	<p>Were cues given to the child to signal the beginning / end of the meal?</p> <p>Appropriate amount / size / type of food for developmental stage?</p> <p>Was a drink provided?</p> <p>Was other food used as an incentive to encourage eating the meal?</p> <p>Was all the food eaten?</p> <p>How long did it take to eat the meal? Was enough / too much time given?</p> <p>Pacing of meal - appropriate pace of offering of food and enough time to try between attempts</p>
Environment - People	
Time	<p>Who is with child? Are they sitting together? Is anyone else nearby?</p> <p>Is there opportunity for eye contact / interaction with parent?</p> <p>Roles - are roles during the meal clear?</p> <p>Is there conversation? Between whom? Is it food related / non-food related?</p>

Environment - Physical	
Time	<p>Is child at table? At appropriate height / chair for developmental stage? E.g. able to make eye contact / engage with adult facilitating meal?</p> <p>Is the child using appropriate cutlery / crockery / hands?</p> <p>Is appropriate help offered to the child?</p> <p>Are distractions removed or limited eg.TV switched off?</p>
Emotional Environment	
Time	<p>What is the emotional tone / atmosphere during the meal? e.g. relaxed / tense / frustration / playful / happy / anxious / angry / flat</p> <p>Are different emotions expressed by different people?</p> <p>How does watching this mealtime make you feel?</p>

Behaviour in Parent

Time	Areas of Strength e.g. sits with child, non food related conversation with child, descriptive commenting Specific praise, encouragement - verbal / gestures , modelling appropriate behaviour Gives specific direction Offers appropriate level of help with meal Expectations and communications are appropriate for developmental stage, using visual cues where necessary	Areas of Difficulty e.g. Engages in other activities / distracted / ignoring child All focus / communication is on food Non-specific praise, Negative comments about child Contradictory communication Inappropriate level of help with meal - too much / too little? Expectations and communications are not appropriate for developmental stage Giving child attention for undesired behaviour Chasing child with food

Behaviour in Child

Time	Areas of Strength e.g. Enjoyment from / exploring food, concentrating on meal / sits nicely, Enjoying interaction with parent, looking for direction, eating food / finished meal	Areas of Difficulty e.g. Distracted, Moves away from food / table Expressing distress, throws food Not eating food

The Meal					
<p>Cues given to the child to signal the beginning and end of the meal</p> <p>Appropriate amount / size / type of food for developmental stage was given</p> <p>A drink provided where appropriate</p> <p>If other food was used as an incentive to encourage eating the meal, this was consistent and appropriate</p> <p>All or most of the meal was eaten in an appropriate amount of time.</p> <p>Food was offered at an appropriate pace for the child so as to allow enough time to try food / not feel forced or rushed.</p>					
1	2	3	4	5	6
The Environment - People					
<p>Family are sitting together, all engaging in mealtime</p> <p>There is opportunity for eye contact and engagement with parent / other family members</p> <p>Roles at mealtime are clear and consistent with one main carer facilitating the child's eating</p> <p>There is relaxed conversation between family members, which is both food and non-food related.</p>					
1	2	3	4	5	6
The Environment - Physical					
<p>The child is at a table and chair of an appropriate height</p> <p>They are able to engage with the parent facilitating the mealtime</p> <p>The child is using appropriate cutlery / crockery / hands - and is not distressed by any mess</p> <p>When required, appropriate help is offered to the child</p> <p>Distractions are removed or limited eg.TV switched off</p>					
1	2	3	4	5	6
Emotional Environment					
<p>Atmosphere during the meal is relaxed and family members appear to be enjoying mealtime</p> <p>There are no negative or uncomfortable emotions expressed / felt during the mealtime (by the family or by you)</p>					
1	2	3	4	5	6
Behaviour in Parent					
<p>Sits with and engages with child during meal with non-food conversation</p> <p>Descriptive commenting, specific praise, verbal encouragement and gestures, gives specific direction</p> <p>Models appropriate behaviour, offers appropriate level of help with meal</p> <p>Expectations and communications are appropriate for developmental stage, uses visual cues where necessary</p>					
1	2	3	4	5	6
Behaviour in Child					
<p>Child is enjoying mealtime / exploring food, concentrating on meal / sitting nicely</p> <p>Enjoying interaction with parent, Looking for direction from parent</p> <p>Eating food / finished meal</p>					
1	2	3	4	5	6

Summary and Advice
<p>e.g. Key points / general comments about overall mealtime</p> <p>What will be the focus of your behavioural intervention?</p> <p>What are the key areas to work on with the family?</p> <p>Are there other professionals that could offer support to this family's mealtimes? E.g. SALT / dietetics?</p>

Appendix 2.4: Information sheet and consent form - healthcare professionals



University of Glasgow | College of Medical,
Veterinary & Life Sciences



HEALTHCARE PROFESSIONAL INFORMATION SHEET v5.3

The development and field test of a Mealtime Interaction Clinical Observation Tool (MICOT): a pilot study.

Introduction

My name is Alison Poupart and I am a trainee clinical psychologist. I am writing to invite you to take part in a research project that I am conducting along with colleagues, Professor Charlotte Wright (Paediatrician), Dr Kathryn Smith (Clinical Psychologist) and Dr Helen Lowther (Clinical Psychologist) at the Feeding Team at the Royal Hospital for Children (RHC) in Glasgow and Dr Alison Jackson (University Teacher, University of Glasgow) as part of my training to become a clinical psychologist.

Please take time to familiarise yourself with the study and feel free to contact me if you would like more information.

Background to the study

A number of complex medical diagnoses can result in feeding difficulties that require temporary enteral feeding ('tube-feeding') to provide nutritional intake for adequate growth and development during medical crisis. Resistance to weaning onto oral feeding has been described in a number of studies and it has been found that tube feeding can lead to feeding difficulties lasting months or years. This can cause considerable stress and anxiety for families; parents can become highly anxious that their child may not be able to maintain weight gain and growth through oral intake alone, leading to maladaptive mealtime interactions which inhibit successful transition.

The multifactorial nature of feeding difficulties necessitates a multidisciplinary treatment approach. Much research in the area of feeding difficulties has utilised the use of videotaped mealtime observation and indicated the use of behavioural management to address problematic parent-child interactions. However to the research team's knowledge, to date, no mealtime observation coding system or observation tool to facilitate this therapeutic process has been shown to be utilised successfully in the clinical setting.

Aim of the study

The aim of the current study therefore is to develop and field test a mealtime interaction clinical observation tool (MICOT), underpinned by psychological theory, to be used during assessment and clinical intervention in families with children with complex feeding difficulties.

Invite to Participate

Stage 1 of the research involves developing the tool. I plan to facilitate four focus groups with clinical psychologists working in paediatric services and other healthcare professionals working in the field of feeding difficulties. I am inviting you to take part in these focus groups.

The focus groups will include firstly, the task of you observing a videotaped mealtime in the way you would currently should you be providing behavioural intervention to address feeding difficulties. It is anticipated that this will facilitate helpful discussion

about the content of the video i.e. noteworthy interactions and the ways in which you take notes / the processes you followed when completing the task. Audio transcription and handwritten notes will be considered data for analysis.

Information gathered from focus groups will be analysed in a structured way and used to develop the first draft of the MICOT, which will then be used in the following focus group and so on. In this iterative process, draft MICOTs will be developed and refined based on feedback from focus groups at each stage.

Stage 2 of the research includes field testing to test psychometric properties of the final version of the MICOT.

What will happen if I agree to take part?

You will be asked to participate in one or two focus groups, lasting up to 2 hours, at the Royal Hospital for Children (RHC) in Glasgow. I plan to facilitate two focus groups of four clinical psychologists, followed by one focus group of other healthcare professionals, followed by one last focus group of four clinical psychologists who have already participated in one of the first two focus groups. The rationale for this is that the final focus group consisting of those already familiar with the task will be able to provide helpful feedback on the draft MICOT before the final version is developed for field testing.

The focus groups will be audio recorded for transcription and any handwritten notes made during the task will be used for data analysis. This data will be held securely in password protected files on NHS GGC computers and in a locked cabinet. Your information may be looked at by representatives of the study Sponsor (NHS GG&C) or regulatory authorities.

The information that I record for my research will not identify you. No person identifiable information will be published in the research.

What will happen to the results of the study?

Results will be written up and submitted to the University of Glasgow as part of the requirements for my qualification as a clinical psychologist. It is also planned that results will be written up and submitted for publication in a journal. It is also possible that the results may be presented at appropriate conferences or meetings. These reports will not contain any information that could identify you. You can indicate on the consent form should you wish to be informed of the results of the study (estimated autumn 2016).

Who has reviewed the study?

The study has been reviewed and deemed ethical by members of staff in the University of Glasgow and by an NHS ethics committee.

What do I do now?

If you wish to participate in a focus group, please get in touch with me at the email address below, and we will be in touch with further details of the focus groups.

When you attend to participate in the focus group, you will have the opportunity again to consider your participation and you will be asked to sign a consent form agreeing to your participation.

You can decide at any time to withdraw your consent to participate in the research. In this case, any information gathered from you will be removed from the study.

Can I find out more?

If you have questions regarding the research project please contact myself, Dr Helen Lowther, clinical psychologist or Professor Andrew Jahoda, using the contact details below.

Thank you for reading this – please ask any questions if you need to

Alison Poupart
Trainee Clinical Psychologist
Mental Health and Wellbeing
University of Glasgow
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
a.poupart.1@research.gla.ac.uk
0141 211 0607

Dr Helen Lowther
Paediatric Clinical Psychologist
Royal Hospital for Children
1345 Govan Road
Glasgow, G51 4TF
Helen.Lowther@ggc.scot.nhs.uk
0141 451 6574/6499

Professor Andrew Jahoda
Research Advisor
Mental Health and Wellbeing
University of Glasgow
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow, G12 0XH
Andrew.Jahoda@glasgow.ac.uk
0141 211 0282



HEALTHCARE PROFESSIONAL CONSENT FORM v5.3

Title of Project: The development and field test of a Mealtime Interaction Clinical Observation Tool (MICOT): a pilot study.

Name of Researcher: Alison Poupart, Trainee Clinical Psychologist

Name of participant:

Job Title:

Please initial box

I have read and understand the information sheet v5.3 (23/11/15) for the above study. I have had the opportunity to ask questions and these have been answered satisfactorily.	
I understand that taking part is voluntary and that I can decide not to take part at any time without giving any reason.	
I understand that the focus groups will be recorded and transcribed.	
I understand that my information may be looked at by representatives of the study Sponsor or regulatory authorities where it is relevant to my taking part in the research.	
I would like to receive information regarding the results of the research project, upon completion (estimated autumn 2016).	
I agree to take part in this research study.	

Name of participant

Date

Signature

Name of person
obtaining consent

Date

Signature

Appendix 2.5: Letter of Invitation, Information sheet and Consent form v2



Confidential

[PARENT NAME]
[ADDRESS]

**Paediatric Clinical Psychology
Administration
OFFICE BLOCK
Ground Floor 0Z0-2/3
Royal Hospital for Sick Children
GLASGOW
G51 4TF**

Tel: 0141 451 6574 / 6499

Date:

Dear [PARENT]

Re: CHILD NAME

DoB:

I am writing to you on behalf of Alison Poupart, a trainee clinical psychologist who is currently working with the Clinical Psychology team and is conducting a research project as part of her Doctorate in Clinical Psychology degree with NHS GGC and the University of Glasgow.

You and your child have been involved with our service in the past, through the feeding clinic at the Royal Hospital for Children, and you had a typical mealtime recorded at home as part of your child's assessment / treatment of their feeding difficulty.

Alison's research is concerned with how clinical psychologists help families with these difficulties, and would require use of videos of typical mealtimes, like the one that you provided.

We ask that you read the enclosed information sheet and consent form carefully, and should you wish to allow your videotaped mealtime to be used in this research, please sign the enclosed consent form and return to us in the stamped addressed envelope provided.

Yours sincerely

**Colette Moore
Assistant Psychologist**

**On behalf of:
Alison Poupart
Trainee Clinical Psychologist**

**Dr Helen Lowther
Clinical Psychologist / Research Supervisor**



PARTICIPANT INFORMATION SHEET v5.3

The development and field test of a Mealtime Interaction Clinical Observation Tool (MICOT): a pilot study.

Introduction

My name is Alison Poupart and I am a trainee clinical psychologist. I am writing to invite you to take part in a research project that I am conducting along with colleagues, Professor Charlotte Wright (paediatrician), Dr Kathryn Smith (clinical psychologist) and Dr Helen Lowther (clinical psychologist) at the Feeding Team at the Royal Hospital for Children (RHC) in Glasgow, as part of my training to become a Clinical Psychologist. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Talk to others about the study if you wish and please feel free to contact me if there is anything you don't understand or would like some more information on.

What is the study about?

My research project is looking at the way in which clinical psychologists work to help families with children with feeding difficulties. Clinical Psychologists working in the feeding team routinely videotape a 'typical' mealtime to form part of the assessment of a child's feeding difficulties. This videotape is then reviewed by the clinical psychologist and parents to identify strengths (aspects of feeding that are working well) and areas for improvement (aspects of feeding that may be contributing to difficulties). The clinical psychologist, at this stage, may make recommendations of changes to be made in order to address the feeding difficulties.

My aim is to develop a helpful tool for clinical psychologists to use when they are reviewing the videotaped mealtime and while discussing this with families. The tool will be called the Mealtime Interaction Clinical Observation Tool (the "MICOT" for short). The MICOT will guide the clinical psychologist in what to look for when watching the videotaped mealtimes, and will facilitate helpful discussion with families, in order to address feeding difficulties.

In conducting this research I plan to use videos of children and their parents interacting at mealtimes that have already been collected at the RHC Feeding Clinic.

You may remember that a video was taken of your child at a mealtime when they were receiving treatment from the RHSC Feeding Clinic in Glasgow. At that time, you gave your consent for the video to be kept by the RHSC feeding clinic to be used for teaching and training purposes. I would like to use your child's video in my research.

What will happen if I agree to take part?

Your video may be used at either phase 1 or phase 2 of the study:

Phase 1: I and up to four clinical psychologists or health professionals in the RHC feeding team will watch the video and discuss together what aspects of the mealtime they noted as important, what they would wish to focus on to improve the situation and what aspects of an observation tool may help them to achieve this. The focus of the

discussion is not your mealtime, rather the process that the professionals go through when working with families in this way. The aim of this phase is to develop a helpful observation tool for professionals to use when completing this work.

Phase 2: I, a clinical psychologist and a health professional in the RHC feeding team will watch your video while using the observation tool developed in phase 1 to test its ability to capture helpful information and facilitate intervention.

The information that I record for my research will not identify you or your child in any way. All personal information will be stored in accordance with strict data protection laws to preserve the confidentiality of you and your child.

Will my taking part in the study be kept private?

Yes. The only people who will have access to the information collected will be myself and my supervisors within the University of Glasgow (Dr Alison Jackson) and at RHC (Dr Helen Lowther, Clinical Psychologist, Dr Kathryn Smith, Clinical Psychologist and Professor Charlotte Wright, Paediatrician). Representatives of the study Sponsor, NHS Greater Glasgow and Clyde, and other regulatory authorities may also look at your information to make sure the study is being conducted properly. All videos and personal information will be stored in locked cabinets on RHC property.

Who will view my child's video?

The only people who need to view the mealtime video of your child are me, up to four clinical psychologists or up to four health professionals within the RHC feeding team, as well as the study Sponsor and regulatory authorities for the reason described above.

Do I have to take part?

No. Participation in the research project is completely voluntary. Even if you have agreed to take part, you have complete freedom to decide at any time that you no longer wish your child's video to be included in the study and it will be withdrawn immediately at your request. Your child's ongoing and future care will not be affected in any way if you choose not to take part or later decide to withdraw.

What will happen to the results of the study?

Results will be written up and submitted to the University of Glasgow as part of the requirements for my qualification as a clinical psychologist. It is also planned that results will be written up and submitted for publication in a journal. Where possible, results of the study may be presented at appropriate conferences and/or meetings. These reports will not contain any information that could identify you or your child. You can indicate on the consent form should you wish to be informed of the results of the study (estimated autumn 2016).

Who has reviewed the study?

The study has been reviewed and deemed ethical by members of staff in the University of Glasgow and by an NHS ethics committee.

What do I do now?

If you wish to consent to your child's video being used in this research project, please sign the enclosed consent form and return it in the enclosed stamped addressed envelope. If we have not heard from you within 2 weeks of receiving this information, a

member of the clinical psychology team will contact you by telephone to discuss the research with you and seek a decision. If you do not wish to receive a telephone call, please indicate this on the enclosed consent form and return it in the enclosed stamped addressed envelope.

Can I find out more?

If you have questions regarding the research project please contact myself, Dr Helen Lowther, clinical psychologist, or Professor Andrew Jahoda, using the contact details below.

Thank you for reading this – please ask any questions if you need to

Alison Poupart
Trainee Clinical Psychologist
Mental Health and Wellbeing
University of Glasgow
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
a.poupart.1@research.gla.ac.uk
0141 211 0607

Dr Helen Lowther
Paediatric Clinical Psychologist
Royal Hospital for Children
1345 Govan Road
Glasgow, G51 4TF
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0141 451 6574/6499

Professor Andrew Jahoda
Research Advisor
Mental Health and Wellbeing
University of Glasgow
Gartnavel Royal Hospital
1055 Great Western Road
Glasgow, G12 0XH
Andrew.Jahoda@glasgow.ac.uk
0141 211 0282



PARTICIPANT CONSENT FORM v5.4

Title of Project: The development and field test of a Mealtime Interaction Clinical Observation Tool (MICOT): a pilot study.

Name of Researcher: Alison Poupart

Video Identifier:

Name of Child: _____ DOB: _____

Please initial box

I have read and understand the information sheet v5.3 (23/11/15) for the above study. I have had the opportunity to ask questions and these have been answered satisfactorily.		
I understand that taking part is voluntary and that I can decide not to take part at any time without giving any reason and without my child's medical care or legal rights being affected.		
I understand that my and my child's information may be looked at by representatives of the study Sponsor (NHS Greater Glasgow and Clyde) and the regulatory authorities where it is relevant to our taking part in the research.		
I agree to take part in the study - my child's feeding clinic mealtime video may be used.		
I would like to receive information regarding the results of the research project, upon completion (estimated autumn 2016).		
I can be contacted by telephone to obtain consent for use of my child's video in this research.	YES	NO

Name of parent / guardian

Date

Signature

Name of person
obtaining consent

Date

Signature

Appendix 2.6: Ethical approval and NHS GGC Research and Development approval



Health Research Authority

East of England - Cambridge East Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Telephone: 0115 8839525

26 January 2016

Dr Alison Jackson
Mental Health and Wellbeing, University of Glasgow
Administration Building, Gartnavel Royal Hospital
1055 Great Western Road, Glasgow
G12 0XH

Dear Dr Jackson

Study title:	The development and field test of a mealtime interaction clinical observation tool: a pilot study.
REC reference:	16/EE/0035
IRAS project ID:	189338

Thank you for your letter of 26 January 2016 I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 22 January 2016

Documents received

The documents received were as follows:

Document	Version	Date
Participant consent form [consent form 250116 v5.4]	5.4	25 January 2016

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	Version	Date
Letters of invitation to participant [covering letter to patients v2]	2	11 January 2016
Other [healthcare professional email invite to participate v1]	1	23 November 2015
Other [healthcare professionals info sheet v5.3]	5.3	23 November 2015
Other [healthcare professionals consent form v5.3]	5.3	23 November 2015
Other [focus group guidance v1]	1	11 January 2016
Other [example draft MICOT v1]	1	11 January 2016
Other [healthcare professional email invite to participate v2]	2	19 January 2016
Participant consent form [consent form 250116 v5.4]	5.4	25 January 2016
Participant information sheet (PIS) [patient info sheet v5.3]	5.3	23 November 2015

REC Application Form [REC_Form_08012016]		08 January 2016
Research protocol or project proposal [Alison Poupart MRP proposal v5.4]	5.4	08 January 2016
Research protocol or project proposal [Alison Poupart MRP proposal v5.5]	5.5	19 January 2016
Summary CV for Chief Investigator (CI) [A Jackson CV short v1]	1	30 October 2015
Summary CV for student [Alison Poupart research CV v1]	1	30 October 2015

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

16/EE/0035	Please quote this number on all correspondence
------------	--

Yours sincerely



Joanne Unsworth
REC Assistant

E-mail: NRESCommittee.EastofEngland-CambridgeEast@nhs.net

Copy to: *Ms Emma-Jane Gault*
Mrs Elaine O'Neill, NHS Greater Glasgow and Clyde

Administrator: Mrs Elaine O'Neill
Telephone Number: 0141 232 1815
E-Mail: elaine.o'neill2@ggc.scot.nhs.uk
Website: www.nhs.gov.uk

R&D Management Office
West Glasgow ACH
Dalnair Street
Glasgow G3 8SW

8 February 2016

Mrs Alison Poupart
Trainee Clinical Psychologist
Mental Health and Wellbeing
Garthavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH

NHS GG&C Board Approval

Dear Mrs Poupart,

Study Title:	The development and field test of a mealtime interaction clinical observation tool: a pilot study.
Principal Investigator:	Mrs Alison Poupart
GG&C HB site	Royal Hospital for Children
Sponsor	NHS Greater Glasgow and Clyde
R&D reference:	GN16CP023
REC reference:	16/EE/0035
Protocol no:	V5.5; 19/01/16

I am pleased to confirm that Greater Glasgow & Clyde Health Board is now able to grant **Approval** for the above study.

Conditions of Approval

1. **For Clinical Trials** as defined by the Medicines for Human Use Clinical Trial Regulations, 2004
 - a. During the life span of the study GGHB requires the following information relating to this site
 - i. Notification of any potential serious breaches.
 - ii. Notification of any regulatory inspections.

It is your responsibility to ensure that all staff involved in the study at this site have the appropriate GCP training according to the GGHB GCP policy (www.nhs.gov.uk/content/default.asp?page=s1411), evidence of such training to be filed in the site file.

2. **For all studies** the following information is required during their lifespan.
 - a. Recruitment Numbers on a monthly basis
 - b. Any change of staff named on the original SSI form
 - c. Any amendments – Substantial or Non Substantial
 - d. Notification of Trial/study end including final recruitment figures
 - e. Final Report & Copies of Publications/Abstracts

Please add this approval to your study file as this letter may be subject to audit and monitoring.

Your personal information will be held on a secure national web-based NHS database.

I wish you every success with this research study

Yours sincerely,



Mrs Elaine O'Neill
Senior Research Administrator

Cc: Ms Emma-Jane Gault (University of Glasgow)

Appendix 2.7: Example transcript from focus group 2

A - "At points the [teddy] thing seemed to work, in a developmentally appropriate way, but I think when he was playing with him with the food, and you want all that play related stuff but I was just thinking, [teddy] shouldn't have been at the table"

B - "It was really interesting because [teddy] got all the negative 'Oh [teddy] you're being a bad boy', I don't think mum could tolerate the meal and [teddy] got the telling off, and the dog got the telling off so when I think about what I was writing about, it was the emotional responses around the table as well, and so when I first started writing I was 'oh, gran, or nanny, is negative and I got a really strong response to that and so I noticed there was times that I felt, that feels negative. So it's not just about the behavioural observations but also an emotional response as well. And actually she wasn't in shot of the video, and so I would have been interested in - it needs to be a whole view of the whole table, so that you can see how the baby is responding to nanny and how Jack is responding to the baby being talked to by mum and so it's relational interaction as well, and not just the behaviour of the child and behaviour of mum"*

C - "It was a very quiet meal, apart from talking to [teddy]"

A - "Or, communication that was based on food, there was not normal typical conversation there with him"

C - "All the focus was on him eating. I was also thinking he's too low in his chair, that pasta's giant, it was difficult to chew - 'chop it up!'"

A - "That's what I had written - 'chop up into pieces'"

D - "I especially liked the time when the nanny took the baby and changed the nappy just behind Jack, while he was trying to eat" (sarcasm).

B - "He didn't attend to that at all"

D - "I thought he did remarkably well"

A - "There was a huge amount that you could have praised"

C - "He sat beautifully, you know, for a child that was given no prompt that it was mealtime apart from being plonked at the table"

D - "He sat still, when mum was serving the bits of pasta, he did put them in his mouth"

A - "He's quite a little lad. He seemed to be struggling with learning cutlery skills, if your focus is on helping a child develop tolerance for textures and chewing and things like that, would you be focussed on cutlery? Surely you could let him use his hands and then at a later stage deal with cutlery?"

B - "I think mum was quite anxious and so did things correctly, so holding his fork correctly and, I couldn't help but feel really full up actually with her 'and chew and chew and chew'...and actually when she was pressing him to chew he held the food in his mouth. He didn't appear anxious in a distressed way, but he felt quite frozen at times while holding the food and focussed on [teddy] as well, so I think he used [teddy] as a container, as a focus and a distraction from food. He tried to feed [teddy] well which was quite nice. There was so much you could praise"

A - "It was overwhelming for that little boy to have all that conversation, everything around food consumption when there were lots of other more helpful things"

A - "I thought mum did positive modelling of eating, but again it might have been in a more normal way, rather than 'we're eating all our food!'"

C - "Yeah, it was kind of like 'I'm finished, what have you been doing?'"

A- "Yeah because actually he was tasting the sauce, licking the sauce, putting it in his mouth, he was exploring it, there was loads of good things he was doing"

(A, B, C, D represent individual clinicians, * name changed for confidentiality purposes, [teddy] name changed for confidentiality purposes)*

Appendix 2.8: Outcomes of thematic analysis across focus groups

Themes identified in focus group 1

Example Items	Theme
<ul style="list-style-type: none"> • Appropriate amount and type of food for developmental stage? • All food was / was not eaten • Length of time to eat meal 	The Meal
<ul style="list-style-type: none"> • Who is with child? • Are they sitting together? • Is anyone else nearby - in the room / house? 	Environment - People
<ul style="list-style-type: none"> • Child is at a table / sitting on a chair • Which are at an appropriate height for developmental stage? • Child is using appropriate cutlery / crockery / hands? 	Environment - Physical
<ul style="list-style-type: none"> • Parent sits with the child • Attends to / ignores child • Engaged in non-food related conversation • Descriptive commenting, Labelled praise, Encouragement - verbal / gestures • Comments negatively about child • Modelling appropriate behaviour • Gives specific direction • Offers appropriate level of help with meal 	Behaviour in Parent
<ul style="list-style-type: none"> • Enjoyment from food • Exploring food • Concentrating on meal / sits nicely • Interacts with parent • Eating food / finished meal • Distracted • Expressing distress e.g. moves away from / throws food / not eating food 	Behaviour in Child

Themes identified in focus group 2

Example Items (new items)	Theme
<ul style="list-style-type: none"> • Appropriate amount and type of food for developmental stage? • All food was / was not eaten • Length of time to eat meal • Cues were given to signal beginning / end of meal • Drink was provided • Preferred food used as incentive 	The Meal
<ul style="list-style-type: none"> • Who is with child? • Are they sitting together? • Is anyone else nearby - in the room / house? • Are roles of the mealtime clear • Is there non-food related conversation? 	Environment - People
<ul style="list-style-type: none"> • Child is at a table / sitting on a chair • Which are at an appropriate height for developmental stage? • Child is using appropriate cutlery / crockery / hands? • Appropriate help is offered to the child 	Environment - Physical
<ul style="list-style-type: none"> • What is the emotional tone during the meal? • Are different emotions expressed by different people? • How does watching the meal make you feel? 	Environment - Emotional
<ul style="list-style-type: none"> • Does parent sit with child / attend to child or are they distracted / engaging in other activities? • Is there non-food related conversation? • Descriptive commenting • Specific / non-specific praise • Encouragement - verbal / gestures to child / other children at table? • Is there modelling of appropriate behaviour? • Offers appropriate level of help with meal / expect too much / too little? • Expectations of / communication with child is appropriate for age / stage of development? • Is the child enjoying mealtime / exploring food / Concentrating on meal / sitting nicely or expressing distress? • Enjoying interaction with parent? • Looking for direction? • Eating food / finished meal? 	Interactions between Parent - Child

Themes identified in focus group 3

Example Items (new items)	Theme
<ul style="list-style-type: none"> • Appropriate amount and type of food for developmental stage? • All food was / was not eaten • Length of time to eat meal • Cues were given to signal beginning / end of meal • Drink was provided • Preferred food used as incentive • Pacing - pace was appropriate to offer enough time to try between attempts 	The Meal
<ul style="list-style-type: none"> • Who is with child? • Are they sitting together? • Opportunity for eye-contact with parent • Is anyone else nearby - in the room / house? • Are roles of the mealtime clear • Is there non-food related conversation? 	Environment - People
<ul style="list-style-type: none"> • Child is at a table / sitting on a chair • Which are at an appropriate height for developmental stage? • Child is using appropriate cutlery / crockery / hands? • Appropriate help is offered to the child • Distractions removed? e.g. TV 	Environment - Physical
<ul style="list-style-type: none"> • What is the emotional tone during the meal? • Are different emotions expressed by different people? • How does watching the meal make you feel? 	Environment - emotional
<ul style="list-style-type: none"> • Parent sits with child / attends to child • Is there non-food related conversation? • Descriptive commenting • Specific / non-specific praise • Encouragement - verbal / gestures to child / other children at table? • Is there modelling of appropriate behaviour? • Offers appropriate level of help with meal / expect too much / too little? • Expectations of / communication with child is appropriate for age / stage of development? 	Behaviour in Parent
<ul style="list-style-type: none"> • Is the child enjoying mealtime / exploring food / Concentrating on meal / sitting nicely or expressing distress? • Enjoying interaction with parent? • Looking for direction? • Eating food / finished meal? 	Behaviour in Child

Themes identified in focus group 4

Example Items (new items)	Theme
<ul style="list-style-type: none"> • Appropriate amount and type of food for developmental stage? • All food was / was not eaten • Length of time to eat meal • Cues were given to signal beginning / end of meal • Drink was provided • Preferred food used as incentive • Pacing - pace was appropriate to offer enough time to try between attempts 	The Meal
<ul style="list-style-type: none"> • Who is with child? • Are they sitting together? • Opportunity for eye-contact with parent • Is anyone else nearby - in the room / house? • Are roles of the mealtime clear • Is there non-food related conversation? 	Environment - People
<ul style="list-style-type: none"> • Child is at a table / sitting on a chair • Which are at an appropriate height for developmental stage? • Child is using appropriate cutlery / crockery / hands? • Appropriate help is offered to the child • Distractions removed? E.g. TV 	Environment - Physical
<ul style="list-style-type: none"> • What is the emotional tone during the meal? • Are different emotions expressed by different people? • How does watching the meal make you feel? 	Environment - emotional
<ul style="list-style-type: none"> • Parent sits with child / attends to child • Is there non-food related conversation? • Descriptive commenting • Specific / non-specific praise • Encouragement - verbal / gestures to child / other children at table? • Is there modelling of appropriate behaviour? • Offers appropriate level of help with meal / expect too much / too little? • Expectations of / communication with child is appropriate for age / stage of development? 	Behaviour in Parent
<ul style="list-style-type: none"> • Is the child enjoying mealtime / exploring food / Concentrating on meal / sitting nicely or expressing distress? • Enjoying interaction with parent? • Looking for direction? • Eating food / finished meal? 	Behaviour in Child

Appendix 2.9: Major Research Project Proposal



University
of Glasgow

DOCTORATE IN CLINICAL PSYCHOLOGY

Trainee	Alison Poupart, 2109056
Version number	5.5
Date	19/01/16
Proposal Title	The development and field test of a mealtime interaction clinical observation tool: a pilot study.
Word count	4255
Academic Supervisor (s)	Dr Alison Jackson
Clinical Supervisor (s)	Dr Helen Lowther Dr Kathryn Smith Dr Charlotte Wright
Additional information	

Abstract

Background

Feeding is one of the most important early skills that a child must learn. It is essential for ensuring adequate nutrition for healthy growth, including brain development. A number of complex medical diagnoses can result in feeding difficulties that require temporary enteral feeding ('tube-feeding') to provide nutritional intake for adequate growth and development during medical crisis. Resistance to weaning onto oral feeding has been described in a number of studies and it has been found that tube feeding can lead to difficulties lasting months or years. This can cause considerable stress and anxiety for families; parents can become highly anxious that their child may not be able to maintain weight gain and growth through oral intake alone, leading to maladaptive mealtime interactions which inhibit successful transition.

The multifactorial nature of feeding difficulties necessitates a multidisciplinary treatment approach. Much research in the area of feeding difficulties has utilised the use of videotaped mealtime observation and indicated the use of behavioural management to address problematic parent-child interactions. However to the author's knowledge, to date, no mealtime observation coding system or observation tool to facilitate this therapeutic process has been shown to be utilised successfully in the clinical setting.

Aims

To develop and field test a mealtime interaction clinical observation tool (MICOT) to be used during assessment and clinical intervention in families with children with feeding difficulties.

Methods

Literature review will provide a theoretical base. An iterative process of focus groups with experts in behaviour and feeding will be used to gather mealtime interaction items and features of clinical utility. In this iterative process, draft MICOTs will be developed

and refined based on feedback from focus groups at each stage. Field testing will be undertaken to test psychometric properties of the final version of the MICOT.

Applications

This research will provide a structured mealtime clinical observation tool that facilitates clinical intervention in families with children with feeding difficulties.

Introduction

Feeding Difficulties

Feeding is one of the most important early skills that a child must learn. The child needs adequate nutrition to satisfy the demands of healthy growth, including brain development. For feeding to succeed, the parent and infant need to be supported adequately, both socially and emotionally. As the infant develops, he or she needs to assume more physical and emotional independence.

The term 'feeding difficulties' describes a wide range of presentations including complex medical diagnoses resulting in feeding difficulties that require enteral feeding ('tube-feeding') to provide nutritional intake for adequate growth and development (Arts-Rodas & Benoit, 1998). Examples of such medical diagnoses include neurological deficits (e.g. cerebral palsy), anatomical abnormalities or congenital or acquired defects (e.g. of the oral cavity, trachea or oesophagus), chronic illnesses (e.g. gastroesophageal reflux, cardiac and lung problems) or genetic or metabolic disorders (e.g. Down's syndrome, phenylketonuria) (Arts-Rodas & Benoit, 1998). In many cases, it is anticipated that the requirement for tube feeding will be temporary, during a medical crisis when a child's nutrition cannot be met through oral intake (Schauster & Dwyer, 1996). Despite this intention, resistance to weaning onto oral feeding has been described (Blackman and Nelson, 1985; Senez *et al.*, 1996). Furthermore, Mason *et al.* (2005) report in their literature review article that, from their 'clinical experience, tube feeding can lead to feeding difficulties lasting months and sometime years' (page 46), where weaning a child (moving from tube feeding to oral feeding) may be a traumatic or prolonged process causing considerable stress and anxiety for families. Mason *et al.* (2005) report that parents become highly anxious that their child may not be able to maintain weight gain and growth through oral intake alone, leading to maladaptive mealtime interactions which inhibit successful transition. Given the fundamental task of feeding to deliver adequate nutrition for growth and development, it is understandable

that parental anxiety and family stress has frequently been found to accompany a variety of feeding difficulties in children.

The above research indicates the multifactorial nature of feeding difficulties, where illness, child feeding behaviour and parental anxiety / family stress influence one another in complex ways that impact on parent-child interactions at mealtimes. Moreover, these interactions are frequently shown to be negative, resulting in maladaptive child feeding behaviour and feeding accomplishment. This multifactorial nature of feeding difficulties therefore necessitates multidisciplinary assessment and treatment (McGrath Davis *et al.*, 2010).

The role of mealtime environment and parent-child interaction has long been recognised as an important factor in the maintenance of feeding difficulties (Arts-Rodas & Benoit, 1998) and therefore a key area for treatment. Schauster & Dwyer (1996) described a four step process of weaning from tube to oral feeding; promote a positive caregiver-child relationship, determine readiness for oral feeding, normalize feeding and initiate a behavioural feeding plan. The 'first goal' of any program to wean a child from tube to oral feeding was to maintain a positive feeding relationship between caregiver and child, that supports optimal nutrition, growth, development and well-being. They further suggested that 'until an appropriate feeding relationship is established for the tube-fed child, the transition to oral feeding will be retarded, thereby increasing risks of problematic eating behaviours and later eating dysfunction' (page 278).

Given the importance of parent-child feeding interactions and the emotional environment in feeding difficulties, it is understandable that behavioural treatment approaches are indicated in children with feeding difficulties. In their article describing an interdisciplinary feeding team, Miller *et al.* (2001) conclude that these empirically based feeding treatments have been well documented in the literature. Clinical Psychologists are therefore ideally placed within a multi-disciplinary treatment team

working with this population, to apply their understanding of psychological theories to develop holistic formulations of feeding difficulties. Their formulations then guide empirically based individualised treatment plans to address the family's emotional environment and parent-child interactions that serve to maintain feeding difficulties.

Psychologically based treatment in feeding difficulties

Behavioural treatments i.e. those based on learning theories including classical and operant conditioning and social learning theory, have frequently been reported to be effective in the management of paediatric feeding difficulties (Benoit *et al.*, 2000; Byars *et al.*, 2003, Piazza & Carroll-Hernandez, 2004). Such treatments therefore aim to identify and extinguish reinforcements (e.g. attention) for undesirable feeding behaviour and introduce positive reinforcements for desirable feeding behaviour. The wider feeding environment is also considered to identify possible sources of modelling appropriate feeding behaviour (e.g. siblings and parents).

The Role of the Clinical Psychologist in Intervention

Wright *et al.* (2011) describe the feeding team at the Royal Hospital for Sick Children (RHSC), Glasgow, which provides multi-disciplinary management of 'hard to wean' children. This management includes psychological input to improve mealtime interactions and relieve parental anxiety. Clinical Psychologists review, with the parents, a video-taped mealtime to help them recognise the impact of their handling of meal times on the child's behaviour and to identify effective strategies they could adopt.

Despite the literature suggesting that behaviour management strategies should be utilised in treatment of feeding difficulties (Arts-Rodas & Benoit, 1998; Schauster & Dwyer, 1996; Miller *et al.*, 2001) and evidence that this is being translated to clinical practice (Wright *et al.*, 2011), there is little literature to indicate any prescribed or structured way to carry out observations of family mealtime interactions.

Current Mealtime Coding Systems

The Mealtime Observation Schedule (MOS) (Sanders *et al.*, 2009) is a coding system used for evaluating interaction styles within the family. The schedule, over 26 pages, describes the 27 codes; 10 parent codes (e.g. affection, praise, non-aversive contact); 9 child codes (e.g. non-compliance, aversive demands); 2 parent mealtime codes (presentation of food, removal of food) and 6 child mealtime codes (e.g. request for food, food refusal).

The Mealtime Family Interaction Coding System (MICS) is a scoring system for use when observing a natural context of a family meal. There are 6 subscales (e.g. task accomplishment, communication, affect management, behavioural control) and 'overall family functioning'. All categories are rated on a 7 point scale from 'complete disruption with missed opportunities' (rating 1) to 'impressive effectiveness with active capitalisation on opportunities' (rating 7).

The Family Mealtime Q-Sort (Kiser *et al.*, 2010) is a 54 item Q-sort whereby the rater is required to sort the 54 cards into three groups corresponding to 'not like this family', 'like this family' and 'neutral / not salient'. The cards in these three groups are then sorted into three further groups. Examples of items include: 'mealtime is disorganised and chaotic' and 'when children get out of line, parents pay no attention'.

Although these observation schedules are shown to successfully differentiate parent-child feeding interactions in problem and non-problem eaters (Sanders *et al.*, 1993) and distinguish clinically relevant dimensions indicative of healthy and unhealthy functioning (Speith *et al.*, 2001), they provide an overall description of strengths and problem areas, rather than lead the observer to the appropriate focus for the evidence based treatment of behavioural management i.e. reinforcements of desirable and undesirable behaviour and modelling.

Aim

The development of new valid and reliable observation measures is lengthy, even over a number of years (Curle & Keller, 2009; Keller *et al.*, 2012). While it is desired to develop an observation tool that is robust, reliable and valid, it is also important to consider the benefits of being able to develop a tool timeously for use by those working with families with feeding difficulties currently without a structured tool. This therefore, is a pilot study, which aims to develop a mealtime interaction clinical observation tool (MICOT), underpinned by learning theories, that will be used to facilitate assessment and psychological intervention in families with children with feeding difficulties.

Plan of Investigation

This study will follow an iterative process. Literature regarding feeding difficulties and learning theories and the observation tools previously described will provide a theoretical base. A series of four focus groups, or 'working groups' with feeding and behaviour experts, will be carried out to develop the content and structure of the tool, each focus group building on the previous. The tool will then be subjected to field testing and psychometric analysis. Focus groups and field testing of the MICOT will take place at the RHC or other appropriate NHS site.

Development of the mealtime interaction clinical observation tool (MICOT)

Focus groups

Eight Clinical Psychologists working in the field of paediatric psychology (recruited from paediatric clinical psychology, NHS GGC and four non-clinical psychologist health care professionals working in the RHC feeding team, will be invited to take part in a series of focus groups (Appendix 1), during their working hours.

Focus group guidelines will be followed (Flick, 2014); they will each last approximately 1.5 – 2 hours. Groups will be audio-taped to enable verbatim transcription. Key discussion areas will be recorded on a flip chart for reference during discussion. An outline (Appendix 2) has been developed to ensure continuity across groups and that relevant information is gathered. Focus groups serve the purpose of gathering data related to 1) the content of the tool i.e. items, interaction themes and 2) clinical utility of the tool i.e. identifying a helpful way of laying out this information to ensure efficacy and efficiency.

Focus groups will include firstly, the task of professionals observing a videotaped mealtime in the way they would currently, should they be providing behavioural intervention. It is anticipated that asking each professional to engage in this process will precipitate helpful discussion about the content of the video i.e. noteworthy interactions and the ways in which participants take notes / the processes they followed when completing the task. Audio transcription and handwritten notes will be considered data for analysis.

Following focus group 1, a thematic analysis, as described below will be completed using the data to develop the first draft MICOT. The participants in focus group 2 will then be asked to utilise this while completing the task of observing the mealtime. Data from focus group 2 will then be considered for refinement of the draft MICOT. Focus groups 3 and 4 will follow the same process, utilising the most recently developed draft MICOT, based on data from the previous focus groups.

Focus groups 1 and 2 will include clinical psychologists working in paediatric psychology. This will ensure expertise in child behaviour and parent-child interactions within the context of physical health difficulties. Focus group 3 will include non-psychologist feeding experts, to provide opportunity for other aspects of the mealtime to be considered. Focus group 4 will include four clinical psychologists, who have participated in groups 1 and 2. It is anticipated that at this stage, familiarity with the

task will allow for final feedback regarding content and clinical utility, before field testing. Each focus group will observe a different videotaped mealtime to ensure the likelihood of observing an increased number of behaviours and parent-child interactions.

This iterative process of observation, draft and refinement has been utilised successfully in development of a mealtime observation measure (Keller *et al.*, 2012).

Data Analysis

The data corpus will include all four focus group discussions and handwritten notes made during the observations of the videotaped mealtime. Audio-tapes from each focus group will be transcribed. The NVivo 10 for Microsoft Windows computer package designed for the analysis of qualitative data will be used to facilitate analysis. A process of thematic analysis, proposed by Braun and Clarke (2006) will be used to analyse and code data to identify themes related to the content and structure of the MICOT (Flick, 2014). Duplicate or idiosyncratic items will be removed. This approach of thematic analysis of data gathered from focus groups has been used successfully in previous scale development research (Espie *et al.*, 2001; Cuthill *et al.*, 2003).

Appendix 3 illustrates a proposed example of what the draft MICOT might look like, based on expected discussion during the focus groups.

Data Management

Contact details of healthcare professional participants will be held securely on the NHS GGC network. Patient identifiable information is already held, securely, as per the data protection act 1998 and local NHS GGC guidelines. Patient identifiable information related to the research e.g. consent forms and videotaped mealtimes will be held securely in a locked filing cabinet within the RHC clinical psychology department, in line with NHS GGC protocol and the Data Protection At 1988.

Transcriptions of the focus groups will be stored securely on a university laptop, secure university network system or securely on NHS GGC network system. All data will be stored in accordance with the Data Protection Act 1998. Raw data will be held securely for 10 years, as per typical NHS research protocol.

Data will only be accessible by the research team. The RHC clinical psychology administrator will have access to potential patient participants' identifiable information to enable contact to be made via letter. In the instance that a follow up telephone is to be made to discuss a decision regarding consent, a member of the RHC clinical psychology team, independent of the research team, will be provided with the name and telephone number of the potential participant so that they can make telephone contact.

Field testing and psychometric properties

Videotape Recruitment

Routinely, video recording of at least one mealtime is conducted to form part of the overall assessment of a child who is struggling to wean to oral feeding following a period of enteral feeding. Children referred to the feeding team are male and female, between approximately 4 months and 16 years, with the majority of videotaped mealtimes being conducted in families with children between 18 months and 8 years. Recordings of 'typical' mealtimes take place in the family home and usually include a parent – child dyad rather than the whole family. Consent is routinely sought for the videotapes to be used for clinical and training purposes and approximately 100 of these videos are currently held by the RHC clinical psychology team. As it is found that approximately only 1/3 of those asked are likely to 'opt-in', consent will be sought from 60 parents; 20 from each age group 18 months – 3 years, 4 years – 6 years and 7 years – 8 years, to use their videotape for the purpose of the current study, by way of an information sheet. It is anticipated that this would result in consent being given for at least the required sample size of nine videos (three from each age group) for field

testing (see calculation below), and at least a further 4 to provide a different video for each of the four focus groups. See appendix 6 for information sheet and consent form. As suggested by NHS GGC Research and Development team, the feeding team will also amend the existing consent form to enable, from this point forward, consent to be sought from families for their videotaped mealtime to be used in the current research.

Reliability

Inter-rater reliability

Inter-rater reliability is the degree of agreement among raters. Nine videos will be observed using the MICOT by the researcher, a clinical psychologist and a non-psychologist feeding expert in the RHC feeding team, who may have been involved in the focus groups. The following statistical calculation is applicable to ordinal or continuous data, as advised by the Robertson Centre for Biostatistics, University of Glasgow. Inter-rater reliability will be assessed by calculating intra-class correlation coefficients (ICCs). Pearson Correlation Coefficient was used to calculate the sample size to explore association between raters, using the SAS v9.3 programme. It was assumed that good agreement between raters would produce a correlation of 0.8, the alternative hypothesis. No agreement between raters would produce a correlation of 0.0, the null hypothesis. As such, a power calculation was made using a two-tailed test, $\alpha = 5\%$, and a power of 80%. This produced an estimated sample of 9 videos to be rated independently by two or more raters. Recruitment of clinical psychologists and other professionals within the RHC feeding team will be supported.

Internal Consistency

Internal consistency measures whether several items that propose to measure the same general construct produce similar scores. This will be assessed by calculating Cronbach's α : a value of $\alpha = 0.70$ or above is considered to be acceptable (Nunnally, 1978).

Validity

Content Validity

Content validity describes the extent to which the measure covers all facets of the construct and is considered to be subjective. The proposed method of developing the MICOT therefore supports its content validity.

Discriminant Validity

Discriminant validity measures whether or not concepts that are supposed to be unrelated are in fact, unrelated. Discriminant validity has been considered an important aspect to explore in the development of this tool, however, it is thought by the research team to be out with the scope of this current research. It could however, be tested in a follow-up study at a later date.

Health and Safety Issues

Researcher Safety Issues

The researcher will not have any direct face to face contact with families. NHS Health and safety considerations will be made regarding the use of display screen equipment. NHS guidelines regarding moving and handling of equipment, for example DVD player / television, will also be adhered to (Appendix 4).

Participant Safety Issues

The above will apply also to the clinical psychologists who will rate the videotaped mealtimes.

Ethical Issues

Informed consent will be obtained from parents to use their video for current research purposes. As consent has already been obtained to use the video for teaching and training purposes, it is perhaps more likely that families will consent to their video being

used for the current research. Routine clinical care should not be compromised, as the current study utilises data captured as a result of routine clinical care. Anonymity will be difficult to achieve as a result of the research design (observing videos of patients in their own home). However, videotapes will be number coded, by a staff member independent to the research team, so that patient identity will not be shared with the video rater.

No adverse effects are anticipated for families who consent to their video being used. Their only contact with the research team will be via letter and possibly follow up telephone call, to obtain consent.

Consideration will be given to the amount of time given by healthcare professionals to the research, thus reducing time spent in clinical duties.

Ethics approval will be sought from NHS GGC ethics committee and NHS Research & Development team.

Financial Issues

Stationary, printing and equipment costs, up to £94.86, will be incurred (Appendix 5).

Timetable

Phase	Timeframe
Draft Proposal	26 th January 2015
MRP Proposal	20 th April 2015
Final Approved MRP Proposal	August 2015
Ethics approval	2 – 3 months
Recruitment of videos Development of draft MICOT	January 2016 – March 2016
Field testing and psychometric analysis	March 2016 – April 2016
Thesis submission	July 2016

Practical Applications and Dissemination

This research will provide a theoretically based, structured mealtime observation tool that facilitates clinical assessment and intervention in families with children with feeding difficulties.

The study is being completed as part fulfilment of the award of Doctorate in Clinical Psychology. It will therefore be held by the University of Glasgow Thesis service and will be freely available.

Presentation of the research findings at conferences and meetings will be completed where appropriate.

Participants will be provided with a summary of the research findings, should they indicate on the consent form that they wish to receive this.

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